DOCUMENT RESUME

ED 231 351 IR 010 759

TITLE	Public Television Service in Rural America.
INSTITUTION	Public Service Satellite Consortium, Washington, D.C.
SPONS AGENCY	Corporation for Public Broadcasting, Washington, D.C.
REPORT NO	TR-791
PUB DATE	Jan 79
NOTE	119p.; Best copy available.
AVAILABLE FROM	Office of Engineering Research, Corporation for Public Broadcasting, 1111 Sixteenth Street, N.W., Washington, D.C. 20036 ($3.95).
PUB TYPE	Reports - Evaluative/Feasibility (142) -- Reports - Research/Technical (143)
EDRS PRICE	MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS	*Cable Television; Community Attitudes; Community Programs; Costs; Federal Regulation; Financial Support; Program Implementation; Programing (Broadcast); *Public Television; *Rural Areas; Surveys; Television Research; *Television Viewing; *Use Studies
IDENTIFIERS	Appalachia; *Local Origination; Montana; Wyoming

ABSTRACT

Operational alternatives for extending or improving public television service to rural America were studied through site surveys of 47 selected communities in Wyoming, Montana, and the Appalachia regions. The study also examined requirements and costs for and community interest in using small earth stations in conjunction with mini-transmitting cable systems and translators, and generated recommendations and strategies for implementation. Findings indicate that commercial television is widely available because of extensive cable and translator service. Public television, however, is unavailable in large areas of Montana and Wyoming and is often of poor quality. Though public television in Appalachia is more prevalent, the signal quality is poor in many isolated communities. Mixed interest was shown in regard to local origination; the communities' priority was receiving a high-quality, public television signal at modest cost. Although great interest in public television was revealed, a limited understanding of its nature and a general lack of awareness regarding programs was evident. This ten-section report includes appendices of state and regional highlights, related studies, project tasks and survey procedures, training materials, a sample follow-up letter, and sample site-survey reports. (LMM)

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PUBLIC TELEVISION SERVICE IN RURAL AMERICA

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A Study Conducted by
PUBLIC SERVICE SATELLITE CONSORTIUM
for the
Corporation for Public Broadcasting
Office of Engineering Research
Technical Report 791

January 1979

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ABSTRACT

The Public Service Satellite Consortium, (PSSC), under contract to the Corporation for Public Broadcasting, conducted a study to examine operational alternatives for extending or improving public television service to rural America.

Selected communities in Wyoming, Montana and the Appalachia region were surveyed. PSSC coordinated the surveys in Wyoming and Montana. The Appalachian Education Satellite Program (AESP), under subcontract to PSSC, surveyed and reported on rural communities in the Appalachia region.

The need to extend public television service to geographically isolated communities has been well-documented in the past, however, it has not been technically or economically feasible. Accordingly, the impetus for this study was due in part to recent developments in telecommunications technology in concert with the recognized need for improved services to rural communities.

High-power satellite systems and the trend toward lower cost earth stations, make it possible to receive television programs directly from the satellite in areas which are not adequately served by existing public television stations. The advent of the public television satellite system, which will use the WESTAR satellite to deliver PBS programs on a nation-wide basis, provides an opportunity to initiate an operational plan to extend public television to rural America.

An information base was required to design a meaningful implementation plan. As part of the study, site surveys were conducted in Montana, Wyoming (the only two states which do not have at least one public television station) and rural Appalachia. A total of 47 rural communities were surveyed -- 17 in Montana, 17 in Wyoming, 13 in Appalachia. Data gathered during the site surveys included both community information and technical information to determine community interest in public television as well as the technical and financial requirements for receiving public television using small earth stations in conjunction with mini-transmitters, cable systems, and translators.

Abstract

The findings from the study indicate that commercial television has saturated the continental U.S. Commercial television is now available in the most rural of communities because of extensive cable and translator service. Public television, on the other hand, is still not available in large areas of Montana and Wyoming. Where it is available, the quality is often poor or spotty. Public television in Appalachia is more prevalent, however, the signal quality is poor in many rural, isolated communities.

In regard to local origination, there was mixed interest on the part of the communities. The costs involved and the potential use in a small community were cited most often as reasons for their limited interest in local origination. The community's priority was in receiving a high quality public television signal at a modest cost.

Although the findings from this study revealed a great interest in public television on the part of rural communities, a limited understanding of the nature of public television and a general lack of awareness regarding public television programs was evident.

The realization that outside funding would be required to implement any plan was paramount. Technical and financial support from appropriate agencies will be required to enable unserved rural communities to receive a high quality public television signal.

By design, this study focused on rural communities in Montana, Wyoming and Appalachia; however, the procedures and guidelines should prove useful in similar efforts to expand public television service to other regions of the country.

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SECTION I

BACKGROUND OF THE STUDY

Purpose

Although tremendous gains have been made in public television service in recent years, many rural communities continue to be unserved. The advent of the public television satellite system will improve the quality and increase the capacity of public broadcasting, but will not resolve the lack of public television service in rural, geographically isolated communities.

This project examined operational alternatives, requirements, and costs to extend public television service to rural America. The study also generated recommendations and strategies for implementation.

Rationale

The Corporation for Public Broadcasting and Western Union signed a contract in June 1976 to provide WESTAR satellite service to the Public Broadcasting Service, National Public Radio, and the participating public broadcasting stations. The public television satellite system, which will be fully operational by January 1979, will interconnect public television stations by satellite and replace the present terrestrial interconnection consisting of land lines and microwave equipment.

Public Broadcasting Service (PBS) programs will be broadcast on a nationwide basis to 152 receive-only earth terminals located at public television stations throughout the country. In addition, this satellite interconnection will provide real time transmission to Hawaii, Alaska, Puerto Rico and the Virgin Islands -- areas presently receiving programming on a delayed basis.

A large number of rural communities, however, remain unserved. Through the use of small earth stations and mini-transmitters, or in conjunction with existing translator and cable systems, public television can also be extended to unserved rural communities.

Traditionally, rural communities are described by density characteristics. The "rural" population has been defined by the Bureau of the Census as people who live in areas with less than 2,500 inhabitants. However, any analysis of rural communities must include such factors as limited accessibility to conventional means of transportation to population centers and limited accessibility to communications systems, including public television.

The screening criteria used in selecting communities was: rural community in Montana, Wyoming or Appalachia with a population under 2,500; not in proximity to a population center; limited or no access to a public television signal; interest and willingness to participate in the study.

Goals and Objectives

The goals of this project were to identify and survey rural communities and to assist them in formulating operational plans for gaining access to or improving public television service. Specifically, the objectives were:

- -to survey rural communities in Wyoming, Montana and Appalachia without adequate public television service;
- -to communicate with decision makers in selected rural communities to ensure local input in planning and development;
- -to analyze the advantages and disadvantages of available options for extending public television service to rural communities;
- -to describe technical and financial requirements for receiving public television service using small earth stations in conjunction with mini transmitters, cable systems and translators;
- -to describe technical and financial requirements for limited local origination capability;
- -to formulate recommendations that will enable rural communities to gain access to or improve public television service;
- -to outline the procedures for acquiring, maintaining and operating equipment and facilities to enable rural communities to receive public television service.

Methodology

In conducting the study, PSSC used a three-phase approach.

Phase I: Development of Information Base. PSSC compiled the necessary information base and developed techniques and procedures for conducting the site surveys. Specifically in Phase I, PSSC examined in detail the technical and economic aspects of utilizing small earth stations, mini-transmitters, cable systems and translators. Questions addressed in Phase I include the advantages, limitations, costs, system parameters, compatibility, regulatory and operational requirements. Operating arrangements were explored, including interface with the organization responsible for local distribution and/or origination.

Phase II: Field Activities. Phase II focused on field-related activities including site selection, training staff to conduct site surveys, and actual site surveys. The data base compiled in Phase I served as the framework for Phase II field activities. Information on equipment, facilities, costs, community demographics, etc., were incorporated in survey instrumentation and the site survey training program.

Four two-person survey teams in Montana and Wyoming, and a three-person team in Appalachia, had primary responsibility for the site surveys and interviews. Site survey teams were selected because of their familiarity with the respective areas to be surveyed and their technical background. Field activities extended over a five-week period. The first week was essentially orientation and training, followed by three weeks of intensive survey and interview activities in each state or region, and one week to prepare final state or regional reports. Within three days of completing each site survey, the team was required to submit to PSSC a community profile, daily survey log and interview summary, site survey questionnaire (Part A-Community Information; Part B-Technical Information) and a final site report. A copy of survey reporting forms are included in Appendix F.

Phase III: Analysis. Information from the site surveys was compiled and analyzed. Documentation efforts during the study focused primarily on descriptive data. Charts and matrices were used to compile, illustrate and analyze the process and outcomes. Data included demographics, community resources (technical, non-technical, human) attitudinal and costs and requirements.

Because the study was based on a selection of towns and town leaders, rather than a sampling among all towns and townspeople, the data is subject to sampling errors. Moreover, survey results were obtained in different settings and situations. Therefore, caution should be used in interpreting raw survey data. The findings, conclusions and recommendations, however, are representative of composite data from each site surveyed and will be utilized to draw inferences to assist other communities with limited access to public television.

SECTION 2

FINDINGS

The major findings gleaned from the Wyoming and Montana surveys are presented separately from those of Appalachia. Although there are distinct similarities, patterns and generalizations, there are some differences in survey methodology and procedures. The format for compiling, analyzing and interpreting the data provides additional justification for a separate list of findings. The conclusions and recommendations in the PSSC report, however, reflect composite findings.

The tabular summary of survey team reports summarizes technical information on each rural community surveyed. This information was synthesized from field reports submitted by survey teams and from other reference sources. It has been compiled in table form so that data on each community can be compared and contrasted, and to facilitate data analysis and interpretation.

Field reports submitted by survey teams, which contain the raw data on each rural community surveyed, are on file at PSSC. Sample reports have been included in the appendix.

Wyoming and Montana

-of the 72 communities screened, no community was identified which did not receive commercial television.

-of the 72 communities screened, 54 did not receive PTV.

-of the 54 communities screened which did not receive PTV, three were not interested in participating in the site survey.

-34 of the 34 sites surveyed expressed an interest in receiving PTV.

-19 of the 34 sites surveyed expressed some interest in local origination.

-34 of the 34 sites surveyed expressed concern regarding costs to receive PTV.

-19 of the 34 sites surveyed were willing to support such an effort to bring in PTV. Although the level of local support varied, no one community could support total system costs.

-17 of the 34 sites surveyed received commercial TV signals by direct broadcast.

-27 of the 34 sites surveyed received commercial TV signals by translator.

-2 of the 34 sites surveyed received commercial TV signals by cable.

-15 of the 34 sites surveyed expressed an interest in a cooperative effort to serve more than one community or to serve residents beyond the town limits.

As a function of expediency and cost:

-24 of the 34 sites surveyed could best be served using a small earth station/mini-transmitter combination.

-one of the 34 sites surveyed could best be served using a small earth station at the head-end of the local cable system.

-6 of the 34 sites surveyed could best be served using a translator to re-broadcast a distant PTV signal.

-3 of the 34 sites surveyed will be, or are receiving PTV through existing translator or cable systems.

Appalachia

-all Appalachian communities in Mississippi are reported to receive public broadcasting signals.

-Appalachian communities in Alabama report 95% public broadcasting coverage.

-Appalachian communities in South Carolina, Ohio and Maryland indicated extensive public broadcasting coverage.

-the majority of communities in the remaining Appalachian states are reported to receive public television, although the quality of the signal is poor or spotty in many communities.

-13 of the 13 sites surveyed received commercial TV.

-2 of the 13 sites surveyed do not receive public TV.

-11 of the 13 sites surveyed indicated the public television signal was poor or spotty.

-13 of the 13 sites surveyed expressed an interest in receiving or improving PTV.

-7 of the 13 sites surveyed expressed some interest in local origination.

-13 of the 13 sites surveyed expressed concern regarding costs.

-11 of the 13 sites surveyed were willing to provide some support to improve public TV service.

-4 of the 13 sites surveyed received commercial TV only by direct broadcast.

-5 of the 13 sites surveyed received commercial TV by direct broadcast or translator.

-3 of the 13 sites surveyed received commercial TV only by cable.

-One of the 13 sites surveyed received commercial TV by direct broadcast or by cable.

-6 of the 13 sites surveyed received some public television by direct broadcast.

-2 of the 13 sites surveyed received some public television by translator.

-3 of the 13 sites surveyed received some public television by cable.

-11 of the 13 sites surveyed could improve or extend public television service through the use of a translator.

-In addition, a mini-transmitter was suggested for 5 of the 11 translator sites because of their high interest in local origination. However, if the signal is received in the community by direct broadcast, it will require demodulation to interface with the mini-transmitter. Conversely, local origination in conjunction with a translator will require modulation of the signal for distribution to the community.

-A small earth station/mini-transmitter combination was recommended for Sylva, NC. It might also be advisable to consider a small earth station to improve signal quality at two other sites where a translator feed requires multiple hops. A small earth station at the head-end of two of the existing cable systems could also improve poor signal quality. In another community, classified as a federal government Radio Quiet Zone, transmitters and translators are restricted. To improve the public television signal would require upgrading of the cable system. The use of a small earth station should also be investigated.

TABULAR SUMMARY OF SURVEY TEAM REPORTS

SURVEY SITES WYOMING (population)	Edgerton 650	Midwest 560	Burns 232
I. Present Television Reception A. Channel No., Call Letters-city (affiliate: A-ABC C-CBS N-NBC I-independent)	Ch.2-KTWO Casper (A,N,C) Ch.9-KBHE Rapid City (PBS)	Ch.2-KTWO Casper (A,N,C) Ch.9-KBHE Rapid City (PBS) Very, very poor	Ch.2-KWGN Denver (I) Ch.5-KYCU Cheyenne (C) Ch.6-KRMA Denver (PBS) Ch.7-KMGH Denver (C) Ch.9 KBTV Denver (A)
B. quality of signals 3-good 2-fair 1-poor	1 - all channels	1 - all channels	1 - all channels
C. reception by: (1) T-translator C-cable; 0-other (2) Translator (output) channels (3) Power (watts)	Direct-Ch. 2 Translator (input) Ch.9 Ch. 7 1 watt	Direct-Ch. 2 Translator (input) Ch.9 Ch. 7 1 watt	Direct N/A N/A N/A
D. nearest public TV station: (1) Ch. No. Call letters-city (2) Distance(miles)direction	Channel 9 KBHE Rapid City, SD 160 miles NE	Channel 9 KBHE Rapid City, SD • 165 miles NE	Channel 6 KRMA Denver, CO 100 miles SW
II. Suggested Receive System A. type (E-earth station MT-mini-transmitter T-translator C-cable)	E/MT (Prefer multi-town reception. Cable franchise pending. One system shared between these towns + 2 others.	E/MT	T
B. suggested location	On bluff East of towns - Central to four towns - area also considered as site by Cable Company.		Center of town - 100 ft. water tower.
C. area to be covered	4 sq.miles plus	1 sq. miles plus	15 mls radius.(Prefer multi-town reception.)
D. suggested power (watts)[1]	100 VHF	100 VHF	10 VHF
E. restrictions (other than dollars or terrain)	None noted	None noted	None noted
F. estimated cost[2]	$45,635 - $54,761	$45,635 - $54,761	$17,790 - $21,354
III. Local Origination A. interest (3-hi, 2-med, 1-lo, 0-no)	1	1	1
B. proposed location	School	School	School
C. equipment available	Yes	Yes	Yes
IV. Community Interest and Support A. interest in receiving PTV	2	2	2*
B. willingness to provide support (3-high, 2-med, 1-low, 0-no) *community indicated certain limitations may apply	1*	1*	2*

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1. *In all cases effective radiated power (ERP) will be greater than transmitter power, depending on transmitter antenna gain.*
2. *Does not include real estate costs, equipment shelter costs, power service and consumption.*

TABULAR SUMMARY OF SURVEY TEAM REPORTS

SURVEY SITES WYOMING (population)	Glendo 800	Glenrock 3000	Manville 100+
I. Present Television Reception A. Channel No., Call Letters-city (affiliate: A-ABC C-CBS N-NBC I-independent)	Ch.2-KTWO Casper (A,N,C) Ch.4-KDUH Hay Springs (N) Ch.5-KYCU Cheyenne (C) (*PTV will be Ch. 6)	Ch.2-KTWO Casper (A,N,C) KWGN Denver (I?) Ch.4-KOA Denver (N) Ch.6-KRMA Denver (PBS) Ch.9-KBTV Denver (A)	Ch.2-KTWO Casper (A,N,C) Ch.4-KDUH Hot Springs (N)
B. quality of signals 3-good 2-fair 1-poor	2 - all channels	3 - all channels	1 - all channels
C. reception by:			
(1) T-translator C-cable; O-other	Translator-all channels	Cable-all channels	Direct
(2) Translator (output) channels	12 8 3 6*	Cable channels not given	N/A
(3) Power (watts)	5W 1W 5W 5W	N/A	N/A
D. nearest public TV station:	Ch.13	Ch.13	Ch.13
(1) Ch. No. Call letters-city	KTNE Alliance, NB	KTNE Alliance, NB	KTNE Alliance, NB
(2) Distance(miles)direction	120 miles ESE	160 miles SE	90 miles SE
II. Suggested Receive System A. type (E-earth station MT-mini-transmitter T-translator C-cable)	REA translator being re-built; will bring PTV	Already receives PTV via local cable system	T
B. suggested location	N/A	N/A	State policy tower, 4 miles north of town
C. area to be covered	2 sq.mls + (prefer multi-town reception)	7-9 sq.mls. (prefer multi town reception)	Less than 1 sq.ml. (Prefer county-wide reception)
D. suggested power (watts)[1]	N/A	N/A	100 UHF
E. restrictions (other than dollars or terrain)	none noted	none noted	none noted
F. estimated cost[2]	N/A	N/A	$17,790 - $21,354
III. Local Origination A. interest (3-hi, 2-med, 1-lo, 0-no)	1	2	1 - lack of people and funds
B. proposed location	N/A	School/cablehead	Lusk school
C. equipment available	N/A	Yes	Yes - Lusk
IV. Community Interest and Support A. interest in receiving PTV	0 - 1	N/A	3
B. willingness to provide support (3-high, 2-med, 1-low, 0-no) *community indicated certain limitations may apply	1	N/A	3*

1. *In all cases effective radiated power (ERP) will be greater than transmitter power, depending on transmitter antenna gain.*
2. *Does not include real estate costs, equipment shelter costs, power service and consumption.*

TABULAR SUMMARY OF SURVEY TEAM REPORTS

SURVEY SITES WYOMING (population)	Manderson 150	Pavillion 300	Ten Sleep 450
I. Present Television Reception A. Channel No., Call Letters-city (affiliate: A-ABC C-CBS N-NBC I-independent)	10-KWRB-Thermopolis (A,N,C) 2-KTWO Casper (A,N,C) 2-KTVQ Billings (C,N)	Ch.2 (some receive) KTWO Casper (A,N,C) Ch.10 (most receive) KWRB Thermopolis (A,N,C)	Most receive only one channel. Ch.2-KTWO Casper A,N,C) Ch.10-KWRB Thermopolis (A,N,C)
B. quality of signals 3-good 2-fair 1-poor	1 all channels	1 all channels	1 all channels
C. reception by: (1) T-translator C-cable; O-other	Translator-all channels	Translator-all channels	O - microwave
(2) Translator (output) channels	Translator channels not given.	Translator channels not given.	N/A
(3) Power (watts)	Power not given	Power not given	N/A
D. nearest public TV station: (1) Ch. No. Call letters-city	Channel 10 KBGL Pocatello, ID	Channel 10 KBGL Pocatello, ID	Channel 9 KBHE Rapid City, SD
(2) Distance(miles)direction	235 miles SW	180 miles WSW	220 miles ESE
II. Suggested Receive System A. type (E-earth station MT-mini-transmitter T-translator C-cable)	E/MT (present translator site)	E/MT	E/MT
B. suggested location	Waterwell Hill	City owned water tower-	On a bluff at edge of town
C. area to be covered	0.18 square miles	0.15 square miles	0.14 square miles
D. suggested power (watts)[1]	10 VHF	10 VHF	10 VHF
E. restrictions (other than dollars or terrain)	None noted	None noted	None noted
F. estimated cost[2]	$36,860 - $44,232	$36,860 - $44,232	$36,860 - $44,232
III. Local Origination A. interest (3-hi, 2-med, 1-lo, 0-no)	2	0	0
B. proposed location	School/Town Hall	N/A	N/A
C. equipment available	Yes	N/A	Yes
IV. Community Interest and Support A. interest in receiving PTV	3*	3*	3
B. willingness to provide support (3-high, 2-med, 1-low, 0-no) *community indicated certain limitations may apply	3*	1*	3

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1. *In all cases effective radiated power (ERP) will be greater than transmitter power, depending on transmitter antenna gain.*
2. *Does not include real estate costs, equipment shelter costs, power service and consumption.*

TABULAR SUMMARY OF SURVEY TEAM REPORTS

SURVEY SITES (population) WYOMING	Shoshoni 900	Mammoth Hot Springs 200	Afton 1500
I. Present Television Reception A. Channel No., Call Letters-city (affiliate: A-ABC C-CBS N-NBC I-independent)	Ch.2 KTWO Casper (A,N,C) Ch.10 KWRB Thermopolis (A,N,C)	Ch.2 KTVQ Billings (C,N) Ch.3 KID Idaho Falls (C) Ch.8 KULR Billings (A,N,C)	Ch.3 KID Idaho Falls (C) Ch.6 KPVI Pocatello (A) Ch.8 KIFI Idaho Falls (N)
B. quality of signals 3-good 2-fair 1-poor	1 - all channels	2 - all channels	3 - all channels
C. reception by: (1) T-translator C-cable; O-other (2) Translator (output) channels (3) Power (watts)	Translator (Ch.2) Direct (Ch.10) 13 power not given	Translator - all channels 10 6 12 1W 5W 1W	Translator - all channels Translator-channels not given 10W - all channels
D. nearest public TV station: (1) Ch. No. Call letters-city (2) Distance(miles)direction	Channel 7 KUED Salt Lake City 220 miles SW	Channel 10 KBGL Pocatello, ID 180 miles SW	Channel 10 KBGL Pocatello, ID Ch.10 80 miles NW
II. Suggested Receive System A. type (E-earth station MT-mini-transmitter T-translator C-cable)	E/MT (present translator site)	E/MT (present translator site)	T
B. suggested location	3 mls. north of town	Bunsen Peak - 4 miles south of town	Big Ridge Peak - north-east of town
C. area to be covered	3½ square miles	2 sq.mls plus	200 sq.mls
D. suggested power (watts)[1]	10 VHF	10 VHF Prefer multi-town reception	10 VHF Prefer multi-town reception
E. restrictions (other than dollars or terrain)	None noted	None noted	None noted
F. estimated cost[2]	$36,860 - $44,232	$36,860 - $44,232	$17,790 - $21,354
III. Local Origination A. interest (3-hi, 2-med, 1-lo, 0-no)	3	3 - (later)	0
B. proposed location	School	Park radio station	N/A
C. equipment available	Yes	Yes	Yes
IV. Community Interest and Support A. interest in receiving PTV	3	3	3
B. willingness to provide support (3-high, 2-med, 1-low, 0-no) *community indicated certain limitations may apply	3*	3	3

---

1. In all cases effective radiated power (ERP) will be greater than transmitter power, depending on transmitter antenna gain.

2. Does not include real estate costs, equipment shelter costs, power service and consumption.

TABULAR SUMMARY OF SURVEY TEAM REPORTS

SURVEY SITES (population) WYOMING	Burlington 100	Hyattsville 54	Lusk 1490
I. Present Television Reception A. Channel No., Call Letters-city (affiliate: A-ABC C-CBS N-NBC I-independent)	Ch.10-KWRB Thermopolis (A,N,C) (Ch.10 is Riverton channel#; Thermopolis cable channel # for Ch.10 not given.)	Ch.2-KTWO Casper (A,N,C) Ch.8-KULR Billings (A,N,C) Ch.10-KWRB Thermopolis (A,N,C)	Ch.2-KTWO Casper (A,N,C) Ch.5-KIVV Deadwood (A,C) Ch.7-KEVN Rapid City (A,C)
B. quality of signals 3-good 2-fair 1-poor	1 - all channels	1 - all channels	1 - all channels
C. reception by: (1) T-translator C-cable; O-other	Direct	Direct	Translator-all channels
(2) Translator (output) channels	N/A	N/A	12 8 10
(3) Power (watts)	N/A	N/A	Power not given
D. nearest public TV station: (1) Ch. No. Call letters-city	Channel 10 KBGL Pocatello, ID	Channel 10 KBGL Pocatello, ID	Channel 13 KTNE Alliance, NB
(2) Distance(miles)direction	235 miles S.W.	240 miles S.W.	90 miles S.E.
II. Suggested Receive System A. type (E-earth station MT-mini-transmitter T-translator C-cable)	E/MT	E/MT	T
B. suggested location	Twin Peaks - northwest of town.	Water tower on bluff above town	State polic tower - 4 miles north of Manville
C. area to be covered	0.15 square miles	0.064 square miles	Less than 4 square miles
D. suggested power (watts)[1]	10 VHF	10 VHF	10 VHF
E. restrictions (other than dollars or terrain)	none noted	none noted	none noted
F. estimated cost[2]	$36,860 - $44,232	$36,860 - $44,232	$17,790 - $21,354
III. Local Origination A. interest (3-hi, 2-med, 1-lo, 0-no)	0	0	2
B. proposed location	N/A	N/A	School/jail
C. equipment available	N/A	N/A	Yes
IV. Community Interest and Support A. interest in receiving PTV	2*	2*	3
B. willingness to provide support (3-high, 2-med, 1-low, 0-no) *community indicated certain limitations may apply	1	1*	3

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1. *In all cases effective radiated power (ERP) will be greater than transmitter power, depending on transmitter antenna gain.*
2. *Does not include real estate costs, equipment shelter costs, power service and consumption.*

TABULAR SUMMARY OF SURVEY TEAM REPORTS

SURVEY SITES WYOMING (population)	Medicine Bow 1000	Sundance 1150	Frannie 139
I. Present Television Reception A. Channel No., Call Letters-city (affiliate: A-ABC C-CBS N-NBC I-independent)	Ch.2-KTWO Casper (A,N,C) Ch.7-KMGH Denver (C) Ch.9-KBTV Denver (A)	Ch.2-KTWO Casper (A,N,C) Ch.3-KOTA Rapid City (NC) Ch.5-KIVV Lead (A,C) Ch.7-KEVN Rapid City (AC)	Site Survey Cancelled
B. quality of signals 3-good 2-fair 1-poor	1 - all channels 3rd generation translator	2 - all channels	
C. reception by: (1) T-translator C-cable; O-other (2) Translator (output) channels (3) Power (watts)	Translator - all channels 13 7 9 power not given	Direct-Chs. 3 & 7 Translator input Ch. 2 & Ch.5 Translator output Chs 9 & 12.	
D. nearest public TV station: (1) Ch. No. Call letters-city (2) Distance(miles)direction	Channel 6 KRMA Denver. CO 160 miles SSE	Channel 9 KBHE Rapid City, SD 50 miles ESE	
II. Suggested Receive System A. type (E-earth station MT-mini-transmitter T-translator C-cable)	E/MT (present translator site)	T	
B. suggested location	Como Ridge	Sundance Peak- South of town	
C. area to be covered	2 sq. mls plus	1 sq. mile plus	
D. suggested power (watts)[1]	10 VHF prefer multi-town reception	10 VHF prefer multi-town reception	
E. restrictions (other than dollars or terrain)	None noted	None noted	
F. estimated cost[2]	$36,860 - $44,232	$7,570 - $9,084	
III. Local Origination A. interest (3-hi, 2-med, 1-lo, 0-no)	2	1	
B. proposed location	School/Town Hall	School	
C. equipment available	Yes	Yes	
IV. Community Interest and Support A. interest in receiving PTV	2	3*	
B. willingness to provide support (3-high, 2-med, 1-low, 0-no) *community indicated certain limitations may apply	1*	3*	

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TABULAR SUMMARY OF SURVEY TEAM REPORTS

SURVEY SITES (population) **MONTANA**	Boulder 1800	Broadus 1000	Roundup 2235
I. Present Television Reception A. Channel No., Call Letters-city (affiliate: A-ABC C-CBS N-NBC I-independent)	Ch.3 KRTV Great Falls (N,C) Ch.4 KXLF Butte (A,C) Ch.13-KGVO Missoula (N,C)	Ch.2-KTVQ Billings (C,N) Ch.8 KULR Billings (A,N,C) Ch.11 KHSD Lead (N,C)	Ch.2-KTVQ Billings (C,N) Ch.8 KULR Billings (A,N,C)
B. quality of signals 3-good 2-fair 1-poor	3 - all channels	2 - all channels	2 - all channels
C. reception by: (1) T-translator C-cable; O-other (2) Translator (output) channels (3) Power (watts)	Translator - all channels 10 7 ? 1W 10W 1W	Translator - all channels 6 4 3 10W all channels	Translator - all channels 11 13 10W all channels
D. nearest public TV station: (1) Ch. No. Call letters-city (2) Distance(miles)direction	Ch.10-KBGL Pocatello, ID 240 miles SSW Ch.7 KUED Salt Lake City,UT 380 miles SSW	Ch.9 KBHE Rapid City, SD 150 miles SE	Ch.9-KBHE Rapid City, SD 300 miles SE
II. Suggested Receive System A. type (E-earth station MT-mini-transmitter T-translator C-cable)	E/MT (either of two present translator sites)	E/MT (present translator site)	E/MT (present translator site)
B. suggested location	1½ miles west of town OR 2 miles south of town.	3½ mls SE town.	Rim of hill North of town
C. area to be covered	1 square mile	400 sq.mls,30 mi. radius Prefer country coverage	1½ square miles
D. suggested power (watts)[1]	10 VHF	10 VHF	10 VHF
E. restrictions (other than dollars or terrain)	None noted	None noted	None noted
F. estimated cost[2]	$36,860 - $44,232	$36,860 - $44,232	$36,860 - $44,232
III. Local Origination A. interest (3-hi, 2-med, 1-lo, 0-no)	3	0	0
B. proposed location	not given	N/A	N/A
C. equipment available	yes	yes	yes
IV. Community Interest and Support A. interest in receiving PTV	3*	3	3
B. willingness to provide support (3-high, 2-med, 1-low, 0-no) *community indicated certain limitations may apply	3*	3	3

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TABULAR SUMMARY OF SURVEY TEAM REPORTS

SURVEY SITES (population) MONTANA	Chester 1000	Chinook 1900	Philipsburg 1200
I. Present Television Reception A. Channel No., Call Letters-city (affiliate: A-ABC, C-CBS, N-NBC, I-independent)	Ch.3-KRTV Great Falls (N,C) Ch.5-KFBB Great Falls (A,N,C) CFCN Lethbridge (CTV) Ch.7-CJOC Lethbridge (CBC)	Ch.3-KRTV Gt.Falls(N,C) Ch.5-KFBB Gt.Falls (A,N,C) Ch.5-CFCN Lethbridge (CTV) Ch.7 CJOC Lethbridge (CBC)	Ch.4 KXLF Butte (A,C) Ch.13 KGVO Missoula (N,C)
B. quality of signals 3-good 2-fair 1-poor	2 - all channels	1 - all channels	3 - all channels
C. reception by: (1) T-translator C-cable; O-other (2) Translator (output) channels (3) Power (watts)	Translator - all channels Translator chs. not given 10W-all channels	Translator - all channels 6 2 4 1W 1W 10W	Translator - all channels 7 9 power not given
D. nearest public TV station: (1) Ch. No. Call letters-city (2) Distance(miles)direction	Ch.7-KSPS Spokane, WA 300 miles WSW	Ch.7-KSPS Spokane, WA 370 miles WSW	Ch.12-KUID Moscow, ID 170 miles WNW
II. Suggested Receive System A. type (E-earth station, MT-mini-transmitter, T-translator, C-cable)	E/MT	E/MT	E/MT
B. suggested location	To be determined	To be determined	To be determined
C. area to be covered	2 sq.mls +. Want to cover entire county	1 sq.ml+. Want to cover entire county	5 sq.miles +. Need multi-town reception
D. suggested power (watts)[1]	10 VHF	10 VHF	10 VHF
E. restrictions (other than dollars or terrain)	None noted	None noted	None noted
F. estimated cost[2]	$36,860 - $44,232	$36,860 - $44,232	$36,860 - $44,232
III. Local Origination A. interest (3-hi, 2-med, 1-lo, 0-no)	1	1	1
B. proposed location	School	School	School
C. equipment available	Yes	Yes	No
IV. Community Interest and Support A. interest in receiving PTV	3	2	2
B. willingness to provide support (3-high, 2-med, 1-low, 0-no) *community indicated certain limitations may apply	2	3*	3*

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TABULAR SUMMARY OF SURVEY TEAM REPORTS

SURVEY SITES (population) MONTANA	Circle 1050	Harlowton 1375	Jordan 531
I. Present Television Reception A. Channel No., Call Letters-city (affiliate: A-ABC C-CBS N-NBC I-independent)	Ch.5-KXGN Glendive (C,N) CH.8-KUMV Williston (N,A) Ch.11-KXMD Williston (C,A)	Ch.2-KTVQ Billings (C,N) Ch.8 KULR Billings (A,N,C)	Ch.3-KRTV Gt. Falls (N,C) Ch.8-KULR Billings (A,N,C)
B. quality of signals 3-good 2-fair 1-poor	2-all channels	2-all channels	2-all channels
C. reception by:			
(1) T-translator C-cable; O-other	Translator - all channels	Translator-all channels	Translator-all channels
(2) Translator (output) channels	9 10 4	10 13	? 9
(3) Power (watts)	10W 10W 10W	10W - all channels	power not given
D. nearest public TV station:			
(1) Ch. No. Call letters-city	Ch.9-KBHE Rapid City, SD	Ch.10-KBGL Pocatello. ID	Ch.9-KBHE Rapid City, SD
(2) Distance(miles)direction	240 mls - SSE	280 mls - SSW	280 mls. SSE
II. Suggested Receive System A. type (E-earth station MT-mini-transmitter T-translator C-cable)	E/MT	E/MT (present translator site)	E/MT
B. suggested location	To be determined	6½ mls S. of town	To be determined
C. area to be covered	Town 3/4 sq.mi radius	1/2 sq.mile	1/2 sq.mile
D. suggested power (watts)[1]	10 VHF	10 VHF	10 VHF
E. restrictions (other than dollars or terrain)	none noted	none noted	none noted
F. estimated cost[2]	$36,860 - $44,232	$36,860 - $44,232	$36,860 - $44,232
III. Local Origination A. interest (3-hi, 2-med, 1-lo, 0-no)	0	0	0
B. proposed location	N/A	N/A	N/A
C. equipment available	Yes	Yes	Yes
IV. Community Interest and Support A. interest in receiving PTV	3	2*	0-1
B. willingness to provide support (3-high, 2-med, 1-low, 0-no) *community indicated certain limitations may apply	3	0-1*	0

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TABULAR SUMMARY OF SURVEY TEAM REPORTS

SURVEY SITES MONTANA (population)	Plentywood 2400	Ryegate 258	Scobey 1700
I. Present Television Reception A. Channel No., Call Letters-city (affiliate: A-ABC C-CBS N-NBC I-independent)	Ch.2 CKCK Regina (CTV) Ch.8 KUMV Williston (N,A) Ch.11 KXMD Williston (C,A)	Ch.2-KTVQ Billings (C,N) Ch.8-KULR Billings (A,N,C)	Ch.2 CKCK Regina (CTV) Ch.8 KUMV Williston (N,A) Ch.11 KXMD Williston (C,A) CH.13 CBKFT Regina (CBC)
B. quality of signals 3-good 2-fair 1-poor	2 - all channels	2 - all channels	2 - all channels
C. reception by: (1) T-translator C-cable; O-other (2) Translator (output) channels (3) Power (watts)	Translator - all channels 13 ? ? power not given	Translator - all channels 12 6 1W all channels	Translator - all channels 6 13 3 10 ? 5W 5W ?
D. nearest public TV station: (1) Ch. No. Call letters-city (2) Distance(miles)direction	Ch.9-KBHE Rapid City, SD 320 miles SSE	Ch.10-KBGL Pocatello, ID 280 miles SSW	Ch.9-KBHE Rapid City, SD 320 miles SSE
II. Suggested Receive System A. type (E-earth station MT-mini-transmitter T-translator C-cable)	E (cable headend)	E/MT (present translator site)	E/MT (present translator site)
B. suggested location	7 miles south of town.	Directly above & overlooking town on N.side rim rock.	3 mls E of town
C. area to be covered	2 sq. mls.	1/16 sq. mile	2 sq miles
D. suggested power (watts)[1]	10 VHF	10 VHF	100 UHF
E. restrictions (other than dollars or terrain)	None noted	None noted	Frequency must be checked with Canadian Border Patrol
F. estimated cost[2]	$27,850 - $33,420	$36,860 - $44,232	$47,080 - $56,496
III. Local Origination A. interest (3-hi, 2-med, 1-lo, 0-no)	0	0	0
B. proposed location	N/A	N/A	N/A
C. equipment available	Yes	No	No
IV. Community Interest and Support A. interest in receiving PTV	1	3	1
B. willingness to provide support (3-high, 2-med, 1-low, 0-no) *community indicated certain limitations may apply	1	3*	3

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TABULAR SUMMARY OF SURVEY TEAM REPORTS

SURVEY SITES MONTANA (population)	WIBAUX 644	BROWNING 1823	WHITE SULPHUR SPRINGS 1300
I. Present Television Reception A. Channel No., Call Letters-city (affiliate: A-ABC C-CBS N-NBC I-independent)	Ch.2-KDIX Dickenson (C,A) Ch.5-KXGN Glendive (C,N) Ch.8-KUMV Williston (N,A) Ch.11-KXMD Williston (C,A)	Ch.3-KRTV Gt.Falls (N,C) Ch.5-KFBB Gt.Falls (A,N,C) Ch.6-CHAT Medicine Hat (CBC)	Ch.3-KRTV Gt.Falls (N,C Ch.4-KXLF Butte (A,C) Ch.5-KFBB Gt.Falls (A,N, Ch.6-KTVM Butte (N,C)
B. quality of signals 3-good 2-fair 1-poor	3 - all channels	1 - all channels	3 - all channels
C. reception by: (1) T-translator C-cable; O-other (2) Translator (output) channels (3) Power (watts)	Cable - all channels (cable output channel same as input channel) N/A	Translator-all channels No translator channels given No power given	Translator-all channels 13 11 9 7 10W - all channels
D. nearest public TV station: (1) Ch. No. Call letters-city (2) Distance(miles)direction	Ch.9-KBHE Rapid City, SD 210 miles SSE	Ch.7-KSPS Spokane, WA 210 miles WSW Ch.12-KUID, Moscow, ID	Ch.10-KBGL Pocatello, I 260 miles SSW Ch.12-KUID Moscow, ID
II. Suggested Receive System A. type (E-earth station MT-mini-transmitter T-translator C-cable)	E (Present cable head-end)	E/MT (Present translator site)	E (to feed existing translator)
B. suggested location	West edge of town	12 mls N. of town	4 mls ESE of town 1300 ft. above town.
C. area to be covered	1 sq. mile plus	50 sq.mls.Indian Reserv. Prefers multi-town recep.	¼ sq.ml + Prefers multi town reception)
D. suggested power (watts)[1]	N/A	10 VHF	10 VHF
E. restrictions (other than dollars or terrain)	None noted	None noted	None noted
F. estimated cost[2]	$27,850 - $33,420	$36,860 - $44,232	$27,850 - $33,420
III. Local Origination A. interest (3-hi, 2-med, 1-lo, 0-no)	0	2	1
B. proposed location	N/A	School	School
C. equipment available	No	Yes	Yes
IV. Community Interest and Support A. interest in receiving PTV	3	3*	3*
B. willingness to provide support (3-high, 2-med, 1-low, 0-no) *community indicated certain limitations may apply	3	3*	3*

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TABULAR SUMMARY OF SURVEY TEAM REPORTS

SURVEY SITES (population) **MONTANA**	Virginia City 150 (winter) 180 (summer)	Thompson Falls 1400	Ft. Benton 1851
I. **Present** Television Reception A. Channel No., Call Letters-city (affiliate: A-ABC C-CBS N-NBC I-independent)	Ch.4-KXLF Butte, (A,C) Ch.6-KTVM Butte (N,C)	Ch.2-KREM Spokane (C) Ch.4-KXLY Spokane (A) Ch.6-KHQ Spokane (N)	Site Visit Cancelled
B. quality of signals 3-good 2-fair 1-poor	1 - all channels	3 - all channels	
C. reception by: (1) T-translator C-cable; O-other (2) Translator (output) channels (3) Power (watts)	Translator - all channels 7 10 1W - all channels	Translator-all channels 6 4 2 10W all channels	
D. nearest public TV station: (1) Ch. No. Call letters-city (2) Distance(miles)direction	Ch.10-KBGL Pocatello, ID 170 mls SSW	Ch.7-KSPS Spokane 80-90 mls W	
II. Suggested Receive System A. type (E-earth station MT-mini-transmitter T-translator C-cable)	E/MT (present translator site)	T	
B. suggested location	west-southwest of town.	Clarks Mountain-5 mls So of Town on mt.top w/elevation gain of 2800'	
C. area to be covered	3/4 sq.ml + Want to cover large area to reduce costs	2 sq.mls plus 7	
D. suggested power (watts)[1]	10 watt VHF	10W VHF-100 UHF (Prefer multi-town reception)	
E. restrictions (other than dollars or terrain)	None	None	
F. estimated cost[2]	$36,860 - $44,232	$17,790 - $21,354	
III. Local Origination A. interest (3-hi, 2-med, 1-lo, 0-no)	1	1	
B. proposed location	Library	School	
C. equipment available	No	Yes	
IV. Community Interest and Support A. interest in receiving PTV	3*	2	
B. willingness to provide support (3-high, 2-med, 1-low, 0-no) *community indicated certain limitations may apply	3*	2	

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Chart I. COMMUNITY BACKGROUND INFORMATION

Ref. No.	Item	Wartburg, Tenn. (Morgan Co.)	Nora, Va. (Dickenson Co.)	Highlands, N.C. (Macon Co.)	Andrews, N.C. (Cherokee Co.)	Sylva, N.C. (Jackson Co.)	McConnelsburg, Pa. (Fulton Co.)	Dillard, Ga. (Raybun Co.)	Spencer, Tenn. (Van Buren Co.)	Blackmont, Ky. (Bell Co.)	Cubbage, Ky. (Bell Co.)	Franklin, W. Va. (Pendelton Co.)	W. Union, W. Va. (Doddridge Co.)	Cincinnatus, N.Y. (Cortland Co.)
1	Population	15 1800	1300	583	13 1500	1600	1200	1000	1700	500	500	1000	1100	1100
2	Major employer, Economic bases, most common jobs	Coal mining, farming, timber Red Cap shirt factory, label factory	Lambert Coal Co	Tourism, construction	Textile & woodworking industries Baker Mfg	Civil service, textiles, W. Car. Univ., SII, N.C. State Gov. Dept. of Trans.	Mechanics, factory work, JLG Inc., farming	Burlington Mills	Cumberland Prod. factories	People go elsewhere	Coal	Hanover Shoes, Franklin Garment, lumber, Navy	Consolidated Gas Equitable Gas agriculture, construction and production	School system Dairies, factories
3	Unemployment	High	Serious	No problem	High	Not serious	High		Factories guarantee jobs	Serious for unskilled	No employment problem	Not serious, but some commute 40 mi	Serious in county No problem 50 mi away	No problem 50 mi away
4	Recreation facilities	High School teams hunting, fishing, swimming, tennis	High School teams tennis	Movies (summers) High School teams tennis	High School football, hunting, fishing, camping	2 movie theaters, school sports, comm. rec. facilities, tennis, baseball	Movie theater, bowling, billiards, school sports, tennis, golf, swimming	None, private school basketball	10 adult & children's softball teams, 14 basketball teams	Little League, High School basketball	Sand lot baseball	Swimming, tennis, good county & city rec. progs., softball, baseball, volleyball	Billiards, swimming, tennis, softball basketball, school teams	Swimming, tennis, golf, only H.S. teams
5	Active community groups	Jaycees, Lions		Rotary, Jaycees Lions, churches	Rescue Squad Lions, Masons	Rotary, Lions, churches	VFW, fire dept., church	Community Club (sm. PTA)	Jaycees very active	Boy Scouts, Masons, church	None	Lions, Ruritan, Extension Homemaker Clubs	Lions	Lions, fire dept., library
6	Local newspapers	2 weeklies	None	1 weekly	1 weekly	1 weekly Sylva Herald	2 weeklies	None	None	None	None	1 weekly Franklin	1 weekly W. Union	1 weekly Pennysaver
7	Other newspapers	Knoxville Journal Knoxville News Sentinel	Cumberland Times Bristol Herald	Atlanta Journal	Asheville Citizen	Asheville Citizen	Hagerstown Chambersburg		Sparta McMinnville	Middlesboro Pineville Knoxville Louisville	Middlesboro	Harrisonburg	Clarksburg	Cortland Syracuse
8	News Sources													
	Local	Newspaper, radio	Radio	Newspaper	Newspaper, radio	Newspaper, radio	Newspaper	Newspaper	Newspaper	Newspaper	Radio	Newspaper & radio	Newspaper	Newspaper & radio
	Regional	TV	TV	Newspaper, TV	Newspaper, TV	Newspaper, TV	Newspaper & radio	Radio	Radio & TV	Newspaper & radio	Radio	Newspaper & radio	Newspaper, radio & TV	Newspaper, radio & TV
	National	TV	TV	TV	TV	TV	TV	Radio & TV	TV	TV	TV	Newspaper & TV	TV & magazines	TV & magazines
	International	TV	TV	TV	TV	TV	TV	Radio & TV	TV	TV	TV	Newspaper & TV	TV & magazines	TV & magazines
9	Racial/ethnic composition	White, Scotch, Irish, German English	White, English	White, English	White, Scotch, Irish, English	White, English, Scotch, Irish, German	White		White	White	White	White	White	White
10	Size of community	2 x 3/4 mi	3 mi	1 sq. mi city limits	3 mi	3 mi radius	5 sq. mi (borough)	7 sq. mi	8 sq. mi	6 mi diameter		1 mi x 4 mi (city)	1 sq. mi (city)	3 mi x 10 mi in valley
	Nearest													
11	Town over 25K	Oak Ridge 20 25 mi	Kingsport 70 80 mi	Asheville 80 mi	Asheville 100 mi	Asheville 46 mi	Chambersburg 22 mi	Anderson 65 mi	Murfreesboro 56 mi			Cumberland 100 mi	Clarksburg 27 mi	Cortland 20 mi
12	Town over 50K	Knoxville 45 mi	Roanoke 200 mi		—		Hagerstown 34 mi	Greenville 84 mi	Chattanooga 65 mi	Knoxville 80 mi	Knoxville 85 mi	Roanoke 125 mi	Wheeling 80 mi	Binghamton 50 mi
13	Airport	17 mi	84 mi	80 mi	100 mi	46 mi	34 mi		65 mi	80 mi	85 mi	Weyers Cave 55 mi	Bridgeport 32 mi	Syracuse 60 mi
14	Post Office	In town	In town	In town	In town	In town	In town	In town	In town	Hulen	In community	In town	In town	In town
15	Hospital	Clinic in town Hospital 20 25 mi	28 mi	In town	In town	In town	In town		Sparta 13 mi	Pineville	Middlesboro 15 mi	35 mi	27 mi	20 mi
16	Community	Union 6 mi.	McLure 3 mi.	Franklin 20 mi	Murphy 15 mi	Waynesville 20 mi	Mercersburg 9 mi	Raybun Gap 1 mi	13 mi	Cuthersville 2 mi	15 mi	Petersburg 35 mi	Smithburg 3 mi	McGraw 18 mi
17	Transportation capability	None	None	None	None	Trailways	Greyhound, Trailways	None	None	Greyhound	None	None	Greyhound & county charters	None
18	Climate	Comfortable	Harsh winter, comfortable summer	Fairly harsh winter, comfortable summer	Comfortable	Winter varies summer comfortable	Comfortable	Fairly comfortable winter & summer	Fairly comfortable winter & summer	Fairly comfortable winter & summer	Fairly comfortable winter, very comfortable summer	Fairly comfortable winter, very comfortable summer	Fairly comfortable winter & summer	Fairly comfortable winter (snow), very comfortable summer
19	Impact of seasons	None	None	Impact on tourism	None	None	None	None	Affects tourism	None	None	Seasonal impact in N. part of county	Very little	Important to planting and harvesting

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Chart II. COMMUNITY EDUCATION INFORMATION

Ref. No.	Item	Wartburg, Tenn. (Morgan Co.)	Nora, Va. (Dickenson Co.)	Highlands, N.C. (Macon Co.)	Andrews, N.C. (Cherokee Co.)	Sylva, N.C. (Jackson Co.)	McConnellsburg, Pa. (Fulton Co.)	Dillard, Ga. (Rabun Co.)	Spencer, Tenn. (Van Buren Co.)	Blackmont, Ky. (Bell Co.	Cubbage, Ky. (Bell Co.)	Franklin, W. Va. (Pendleton Co.)	W. Union, W. Va. (Doddridge Co.)	Cincinnatus, N.Y. (Cortland Co.)
20	SCHOOLS:													
	Elementary:													
	Enrollment	500	540		525	950	600		430	287	200	440	1130 (among 10 in co.)	435 (one elem / high)
	No. of teachers	25	30		23		30	12		11	8			51 (elem & high)
	High School													
	Enrollment	625	468	K 12 380	450	840	550	200 (priv) (160 pub) 13	375	1200	1200	375	518	462
	No. of teachers	28	27	23	28		30	13		37 (K 12)		46 (K 12)	110 (K 12)	
	Trade School													
	Enrollment	Voc. school 175	Voc. school 400	AHC Voc. 15 mi STI 40 mi		S.W. Tech Inst 1200	Tech school 22 mi	0	0	Within H.S. 100	15 mi	Tri County Voc. 35 mi		Cortland 20 mi 89
	Colleges													
	Enrollment	Roane St. Comm 3000 20 mi	Clinch Valley 1000 40 mi	W. Carolina U 35 mi	Tri county Tech Sch. & Comm Coll 575	W. Carolina U 6000		0	0	Barbersville 1000 40 mi				Cortland 16 20 mi
21	VTR/TV sets	2 VTR's TV receivers	1 VTR TV receivers	No VTR 1 TV	No VTR (avail through college) TV receivers	VTR's TV receivers	No VTR's 1 TV	1 VTR for 4 schools	None		None	1 VTR 2 TV's	1 VTR 1 TV	2 VTR's 1 VT player 3 TV receivers 1 camera B/W
22	Higher education	25 30%	25%	40%	27%	70%	20%	20% (15% finish)	15%	10%	25%	35% go on	30% or 30/yr	35% (incl. voc.)
23	Which colleges attended	Roane State Tenn. Tech	Clinch Valley S.W. Comm Mountain Valley	Western Chapel Hill St. Andrew's STI	Tri County Western Carolina Mars Hill	Western	Penn State Hagerstown Jr Shippensburg State	State U Georgia Tech Piedmont	Tenn. Tech	Cumberland Eastern Ky U. of Ky Morehead State	Morehead Lincoln Mem. U Cumberland Union	Shepherd W. Va W. Va. U Fairmont St. Coll	Fairmont State Salem Glenville State W. Va. U	Tompkins S.U.N.Y. at Cortland
24	Availability of adult ed. programs	Fed. funded basic ed.	Colleges & vocational school	Through STI at school & in town	In town	Western, STI Tri County	At school	None	Discontinued (lack of interest)	None	None local 15 mi	Navy courses	Through county schools	Through schools
25	Library	In town	Bookmobile (lib. 11 mi)	In town	In town	In town	Closed	None local Bookmobile 7 mi	Yes	None local Bookmobile at Pineville	None local Bookmobile 13 mi	Bookmobile	Yes (no bookmobile)	Yes
26	Book stores	20 mi	40 mi	In town	15 mi	University	22 mi	7 mi Clayton	30 mi Cookeville	Middlesboro	13 mi Pineville	40 mi Harrisonburg	27 mi Clarksburg	20 mi Cortland
27	Satisfaction with educational opportunities	Sufficient opportunities	Satisfied	Want more opportunities	Satisfied	Very satisfied	Satisfied	Natives satisfied, others not	Very satisfied	Fairly satisfied	Elem. good but without others comm. is not satisfied	Very satisfied	Very satisfied	Fairly satisfied

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Chart III. COUNTY DEMOGRAPHIC INFORMATION

County	Land Area Sq. Mi.	Total Pop.	EDUCATION (Persons enrolled in school) Elementary	High School	College	65 yrs. & over (%)	Total Labor Force	Median Income (1969)
Morgan, Tenn. (Wartburg)	539	13,619	2,690	1,193	110	10.0	3,969	5,363
Dickenson, Va. (Nora)	332	16,077	3,013	1,254	133	8.5	3,706	5,035
Macon, N.C. (Highlands)	513	15,788	2,221	1,175	98	14.3	5,811	5,654
Cherokee, N.C. (Andrews)	452	16,330	2,474	1,141	71	12.0	5,977	5,660
Jackson, N.C. (Sylva)	491	21,593	2,931	1,254	3,103	9.3	7,809	5,933
Fulton, Pa. (McConnelsburg)	435	10,776	1,922	764	58	10.7	4,201	6,882
Raybun, Ga. (Dillard)	368	8,362	1,114	574	10	12.0	3,416	6,056
Van Buren, Tenn. (Spencer)	254	3,758	612	287	—	10.4	1,562	6,014
Bell, Ky. (Cubbage & Blackmont)	370	31,087	5,576	2,027	165	12.0	8,254	4,444
Pendelton, W. Va. (Franklin)	695	7,031	1,047	485	7	14.6	2,207	5,358
Doddridge, W. Va. (W. Union)	319	6,389	1,005	405	25	16.5	1,904	5,892
Cortland, N.Y.	502	45,894	8,169	3,267	3,416	10.1	18,397	9,142

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Chart IV. RADIO, COMMERCIAL TELEVISION AND PUBLIC TELEVISION CAPABILITIES

Ref. No.	Item	Wartburg, Tenn. (Morgan Co	Nora, Va. (Dickenson Co.)	Highlands, N.C. (Macon Co	Andrews, N.C (Cherokee Co.)	Sylva, N.C. (Jackson Co.)	McConnellsburg, Pa. (Fulton Co.)	Dillard, Ga. (Raybun Co.)	Spencer, Tenn. (Van Buren Co.)	Blackmont, Ky (Bell Co.)	Cubbage, Ky. (Bell Co.)	Franklin, W. Va. (Pendleton Co.)	W. Union, W. Va. (Doddridge Co.)	Cincinnatus, N.Y. (Cortland Co.)
	RADIO													
28	Location & call letters	In town WECO	Clinchco, Va 8 mi WDIC	Greenville, S.C 80 mi WFBC	Murphy, N.C 15 mi WCVP WKRK	In town WRGC (Univ.) WWCU	In town WVFC	None	None local Sparta 13 mi McMinnville 21 mi Cookeville 30 mi	None local	None local Pineville 20 mi Middlesboro 15 mi	None local Harrisonburg 35 mi WSVA Moorefield 42 mi WELV	None in county Clarksburg 27 mi WBNA, WBOY, WPDX	None local Cortland 20 mi WKRT, WNOZ, Syracuse 50 mi WSYR, WFTM, WHDH
	COMMERCIAL TV													
29	Distribution	Direct & translator	Direct	Direct & translator	Direct & translator	Direct & translator	Cable & direct	Direct & translators	All direct	Cable	Direct	Cable	Cable	Direct
30	No. of channels	2 or 3	2	3	up to 7	3 5	2 8 without cable 12 + UHF w/cable	3	10	4 6	2 4	4	4	3
31	Location & call letters	Knoxville WBIR Knoxville WATE	Bristol WCYB Johnson City WJHL	Greenville WFBC Spartanburg WSPA Asheville WLOS	Chattanooga WRCB Knoxville WBIR Greenville WFBC Asheville WLOS	Asheville WLOS Spartanburg WSPA Greenville WFBC	Baltimore WBAL Harrisonburg WSVA Clearfield WPSX Washington, D.C. WRC [illegible]	Greenville Atlanta Spartanburg	Nashville Chattanooga Knoxville	Knoxville Asheville Lexington Gainsville	Gainsville	Roanoke WSLS Roanoke WDBJ Weston WDTV Harrisonburg WHSV		Syracuse WSYR WTVH Binghamton [illegible]
32	Program satisfaction	Fairly satisfied	People offended by violence, language, etc	Not satisfied	Fairly satisfied	Not satisfied	Satisfied	Fairly satisfied, but miss arts & drama		Fairly satisfied	Not at all satisfied with either reception or programming	Quite disturbed by crime, violence, esp. rural areas	Fairly satisfied	Fairly satisfied or not much loud rumbling against
	PUBLIC TV													
33	Distribution	Direct	Direct	Direct	Direct & translator	Direct & translator	Direct & cable	None	Direct	None	Some reception from Sneedville	Cable	Direct to cable	Direct
34	Location & call letters	Sneedville, Tenn WSJK	Norton, Va WSVN	Athens, Ga WGTV	Chapel Hill, N.C WVNC Sneedville, Tenn WSJK	Chapel Hill, N.C WVNC Sneedville, Tenn WSJK	Hershey WITF Baltimore WMPB		Nashville WDCN			Morgantown Keyser Franklin		Syracuse WCNY Binghamton WSKG
35	Programming reception/grade of signal	Grade 4 Reception varies widely	Reception varies widely	All ranges most don't have PBS reception	Reception varies from no reception to good	Depending on location grade 4 5	Reception varies Cable goes out		Grade 2 on plateaus, none in valleys	Cable operator unwilling to add PTV into cable	Poor to nonexistent	Poor to nonexistent	Fair in cable. None in remainder of county	Poor to none (Not graded)
36	Interest in PBS	Schools want for state ETV programs	Schools want PBS	Schools want PBS	Schools want PBS	Very interested	School & community interested; schools not using cable	Yes, needs met	Yes, needs met, but timing of public affairs is bad	Yes, not viewed, but printed material seems seems okay	Interested in PBS, not firsthand experience	Yes, needs met	Yes, needs met	Yes, needs met

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Chart V. FINANCIAL AND TECHNOLOGICAL REQUIREMENTS

Ref. No.	Item	Wartburg, Tenn. (Morgan Co.)	Nora, Va. (Dickenson Co.)	Highlands, N.C. (Macon Co.)	Andrews, N.C. (Cherokee Co.)	Sylva, N.C. (Jackson Co.)	McConnellsburg, Pa. (Fulton Co.)	Dillard, Ga. (Rayben Co.)	Spencer, Tenn. (Van Buren Co.)	Blackmont, Ky. (Bell Co.)	Cubbage, Ky. (Bell Co.)	Franklin, W. Va (Pendelton Co.)	W. Union, W. Va. (Doddridge Co.)	Cincinnatus, N.Y (Cortland Co.)
37	Possible Constraints in Providing or Improving Public Television	Terrain, economic	Terrain, Economic	Terrain community interest	Terrain, economic	Terrain, economic	Terrain, economic	Terrain, economic population density	Terrain, economic population density	Terrain, economic population density	Terrain, economic population density	RF Quiet Zone terrain, economic; population density	Terrain, economic	Terrain, economic
	CABLE SYSTEM													
38	Head End Location	None (in negotiations now). (Closest cable is 17 miles.)	None	None	None	None	Yes, mountaintop east of town	None (except Clayton 7 miles)	None	Yes - does not carry PTV Modes	None	Yes, but reception is poor. PBS virtually blocked out. Adjacent to town	W. Union only (2) nearby	None
39	Ownership						Tri State Cable TV			West End Cable Co Charlie Jackson lives within County		Woodrow Hartman (local in Franklin)	West Union Cable Co Eugene Stewart (lives elsewhere)	
40	Vintage						Unknown - being updated			Old, cheap, home brew		1972		
41	Condition						Poor to fair - being updated			Poor		Improving but not fully recovered from winter of 1978	Fair to poor	
42	Capacity						12					12	12	
43	Originators/ How Imported						Baltimore, Md., D.C., Hagerstown, Md., Lancaster, Pa., Altoona, Pa., Direct off air					Off air, Harrisonburg, Va., Roanoke, Va., Clarksburg, W Va	Off air	
44	Penetration						80% (600 + subscribers)					95% (per fact book)	80% (per fact book)	
45	Installation/ Subscription/ Billing						$15/$5.00 monthly or annually					$10/$6/monthly (per fact book)	$30/$6/monthly coupons	
	PROPOSED SMALL EARTH STATION	Not required	Not required	Not required	Not required	Yes	Not required	Not required	Not required	Not required	Not required	Ideal situation with PBS stations prohibited from sending suitably strong signal	Not required	Not required
46	Location, general					Southwestern Technical Institute Campus						In town		
47	Existing Distribution System					None								
48	Proposed Distribution System					Mini transmitter						See community recommendations		
49	PROPOSED TRANSMISSION SITE (TYPE)	Translator	Mini transmitter or translator	Translator (being installed) Mini transmitter desired	PBS Translator exists	Mini transmitter with (2) separate one hop microwave inputs plus translator and PBS satellite and translator inputs	Mini transmitter	Mini transmitter	Mini transmitter	Translator	Translator(s) or cable extension	None permitted	(11) translators	Translator
50	Coverage Objective(s)	#1 County, #2 Wartburg Proper #3 Wartburg plus	Town and surrounding 1½ mile radius	Town and surrounding area 1 sq. mi. plus 2 mi. radius	(See recommendations section)	8 x 3 miles around Sylva	McConnellsburg	Dillard & surrounding area Assymetrical Star 1.5 N x 2.05 x 1.7 E x 3.0 mi. W (Really want total County coverage)	#1 choice is whole County (20 x 20 mi) #2 more people over the hill 1.6 x 6.5 mi N S from water tower or SSW from TV shop	3 mile radius	2 miles into community		Each of (11) County schools and whatever else gets covered	3 x 10 mi. swath

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Chart V. FINANCIAL AND TECHNOLOGICAL REQUIREMENTS — Continued

Ref. No.	Item	Wartburg, Tenn. (Morgan Co.)	Nora, Va. (Dickenson Co.)	Highlands, N.C. (Macon Co.)	Andrews, N.C. (Cherokee Co.)	Sylva, N.C. (Jackson Co.)	McConnellsburg, Pa. (Fulton Co.)	Dillard, Ga. (Rabun Co.)	Spencer, Tenn (Van Buren Co.)	Blackmont, Ky. (Bell Co.)	Cubbage, Ky. (Bell Co.)	Franklin, W. Va. (Pendleton Co.)	W. Union, W. Va. (Doddridge Co.)	Cincinnatus, N.Y. (Cortland Co.)
51	Transmitter Power and Type	#1 Many 100 watt UHF translators #2 (1) 100 watt UHF translator on Pilot Mt. 6 mi. NW of town #3 Add (1) 100 watt UHF translator to Communications Tower in Frozen Head State Park	100 watt UHF directional	100 watt UHF being installed		100 watt UHF directional	100 watt UHF directional	100 watts – directional – UHF	100 watts – directional – UHF	(1) or possibly (2) 100 watt directional · UHF	100 watt directional UHF (several)		Schools alone possibly 1 watt UHF. Schools with surrounding pop possibly 100 watt UHF	100 watt UHF directional
52	Location General	Answered in Ref. No. 51	Hill between elementary & high school	(2) mountaintops being studied		Kings Mountain	Mountain at Knobsville	Hill opposite Gulf Station	(1) atop 128' water tower center of town (2) Behind TV shop	Not specified Many hills surround the area	Not specified Many hills surround the area		Use nearby hill for each school	Hill west of 3 x 10 mi swath
53	Prime Power Availability	#1 None #2 Yes #3 Yes	None	Yes		Yes	Yes, within 1 mile	None exists close by	Exists at both sites	None exist	None exist		To be provided	None existing
54	Source	State	Not determined	City Power		Jackson County	West Penn. Power	Georgia Power	Caney Fork Electric		Monongahela Power Co		Monongahela Power Co	Niagra -- Mohawk Power Co
55	Accessibility	All year round	Not determined (no accessibility now)	Yes, year round		year round	year round	4 wheel drive summer, on foot some of winter	All year	Not determined	Not determined		To be determined	To be determined
56	Legal Restrictions	Non known	Owned by Clinchfield Coal Co	1 privately owned 1 state owned		None	None	Privately owned but no problems expected	#1 None #2 Has been cleared with owner	General Problem People not issuing leases for mountaintops which have any possibility of being strip mined. Cable operator threatens to challenge in court	General Problem People not issued leases for mountaintops with any strip mining possibility	Not allowed -	None known	None expected
57	Environmental Restrictions	None	None	None		None	None	None	None	None	None		None known	None known
58	Air Space Restrictions	None	None	None		None	None	None	None	None	None		None	None
59	Signal Interference	None expected	None	None		None	None	None expected	None expected	None expected	None expected		None expected	None expected
60	Operator	City personnel	Not determined	State mother station UNC TV		Southwestern Tech. & Western Carolina Univ	School system	Foxfire Program and/or Clayton High School	School system	Open problem since cable operator is hostile and no technical expertise seems to exist locally	None identified Al Brock possible since Brock owns cable which comes within 2 miles		Not designated perhaps cable operator	Propose mother station operate and maintain
61	Maintenance	City personnel	Not determined	State mother station UNC TV		Southwestern Tech. Engineering	School system	Charles Pennington Cable operator in Clayton	Joe Rogers (TV service)					
	PROPOSED LOCAL ORIGINATION													
62	Interest	None	Schools Interested	Schools Interested	None	High	Schools and mayor	High based upon experiences of Clayton (7 miles)	High	None	None	Schools interested	None	None
63	Limitations		Difficult to organize community	Problems with local support		Economic & equipment	Economic	All operations probably from outside Dillard	None known			None cited		
64	Locations		Would require capital improvement to school	School building		Southwestern Tech. for studio Western Carolina Univ. for studio	School buildings	Schools and mini transmitter site	Elem. school or college or new shelter			School and new shelter		

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Chart V. FINANCIAL AND TECHNOLOGICAL REQUIREMENTS — Continued

Ref. No.	Item	Wartburg, Tenn. (Morgan Co.)	Nora, Va. (Dickenson Co.)	Highlands, N.C. (Macon Co.)	Andrews, N.C. (Cherokee Co.)	Sylva, N.C. (Jackson Co.)	McConnellsburg, Pa. (Fulton Co.)	Dillard, Ga. (Rabun Co.)	Spencer, Tenn. (Van Buren Co.)	Blackmont, Ky. (Bell Co.)	Cubbage, Ky. (Bell Co.)	Franklin, W. Va. (Pendleton Co.)	W. Union, W. Va. (Doddridge Co.)	Cincinnatus, N.Y. (Cortland Co.)
	FINANCIAL ARRANGEMENTS Construction Costs													
65	Extend distribution	$17,644	$19,230	$ 1,440		$17,644	$19,230	$19,230	(2nd choice) $19,230	(For each) $17,644	(For each) $17,644	(1) TVHO $27,850	$194,084	$17,644
66	Local Origination		$14,628	$11,000		$77,809 (Exclusive of existing local orig equipment)	$ 5,000	$ 6,588	$13,588	—	—	$13,588		
67	Subtotal	$17,644	$33,858	$12,440		$95,453	$24,230	$25,818	$32,818	$17,644	$17,644	$41,438	$194,084	$17,644
	MAINTENANCE AND OPERATIONS/ANNUAL													
68	Extend distribution	$ 1,042	$ 1,135	$ 93		$ 1,042	$ 1,135	$ 1,135	$ 1,135	$ 1,042	$ 1,042	$ 1,250	$ 11,468	$ 1,042
69	Local Origination		$ 950	$ 715		$ 4,552 (Exclusive of existing local orig equipment)	$ 375	$ 428	$ 883			$ 883		--
70	Sub Total (See Appendix for details)	$ 1,042	$ 2,085	$ 808		$ 5,594	$ 1,460	$ 1,563	$ 2,018	$ 1,042	$ 1,042	$ 2,133	$ 11,468	$ 1,042
	COMMUNITY SUPPORT													
71	Estimate of Extent	Probably can raise $10,000	Possibly none from community	May get some community support		$20,000	Could possibly raise some funds	Probably could not raise any money	Possibly J.C. drive and mfg. plants could get $5,000 together	A few hundred dollars – maybe	Less than $5,000	Town and county could possibly get $10,000 together	$25,000 absolute upper limit	$5,000 possibly
72	Method		Coal company possibly would underwrite	Promotion by community representatives		Funds raised on a County basis		Foxfire Program could operate & possibly fund maintenance once installed	Direct contribution	Solicitation by interested individuals	Solicitation by unnamed parties	Appropriation & solicitation	School budget alone	Probably could be educated for PTV improvement fund drive

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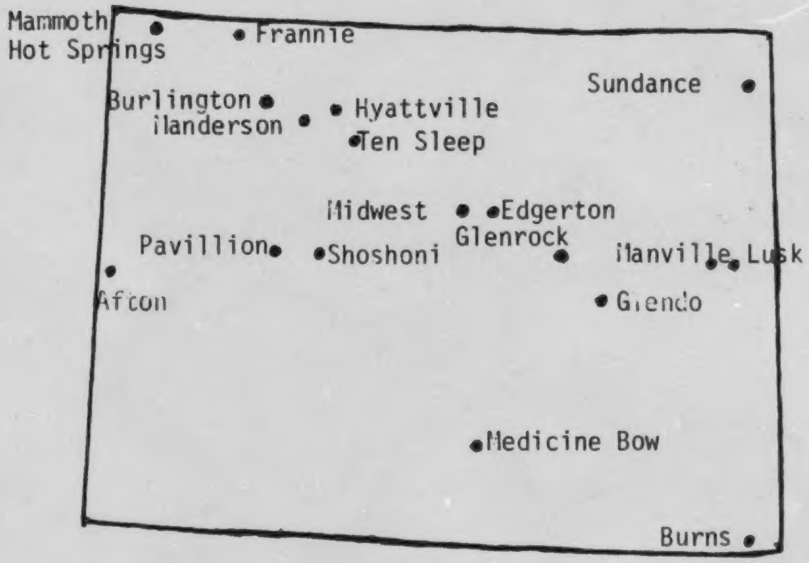
SECTION 3

SITE SURVEY LOCATIONS

WYOMING


Mammoth Hot Springs
Frannie
Sundance
Burlington
Manderson
Hyattville
Ten Sleep
Midwest
Edgerton
Glenrock
Pavillion
Shoshoni
Manville
Lusk
Afton
Glendo
Medicine Bow
Burns

COMMENTS

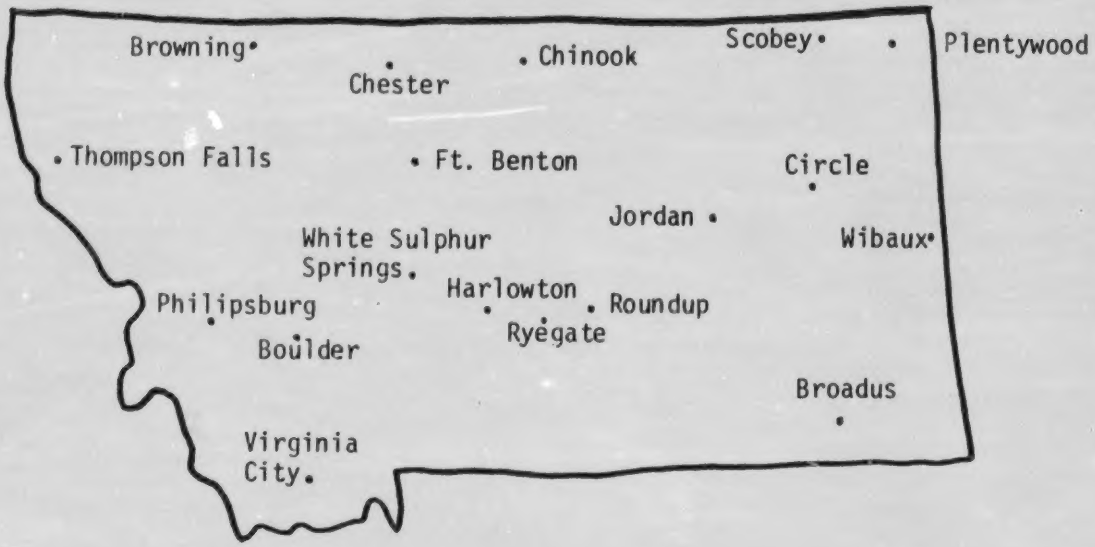
- Only five of the 151 translator stations operating in Wyoming carry public television.
- Far west border, mid-state to upper northwest corner, is growing in public television reception through pay cable system. Examples of towns which are or will be receiving public television via pay cable are Big Piney, LaBarge, Pinedale and Dubois. However, Afton and Mammoth Hot Springs do not receive public television.
- West of Horn Mountains on the northern border there is little public television reception. Examples of towns not receiving public television are Frannie, Burlington, Manderson, Ten Sleep and Hyattville.
- Just north of central Wyoming there is a pocket of communities which receive minimal or no public television. Examples of towns receiving poor quality public television signals are Midwest and Edgerton. Linch and Kaycee receive no public television.
- Just north of the extreme southeast corner, some communities will receive public television in the near future. Although Manville and Lance Creek receive no public television, Lusk will shortly receive public television via pay cable, and Glendo via translator. Glenrock receives public television via local cable.

- Extreme southeast corner is generally receiving public television. LaGrange, Ft. Laramie and Albin receive public television via REA translator from KTNE, Alliance, Nebraska; Pine Bluffs and Guernsey via pay cable. Burns receives a minimal, poor quality public television signal, while Hawk Springs receives no public television.
- West of Laramie Mountains there is very little public television reception. Examples of towns not receiving public television are Rock River, Medicine Bow, McFadden and Shirley Basin.

SECTION 3

SITE SURVEY LOCATIONS

MONTANA


Browning
Chester
Chinook
Scobey
Plentywood
Thompson Falls
Ft. Benton
Circle
Jordan
Wibaux
White Sulphur Springs
Harlowton
Roundup
Philipsburg
Ryegate
Boulder
Broadus
Virginia City

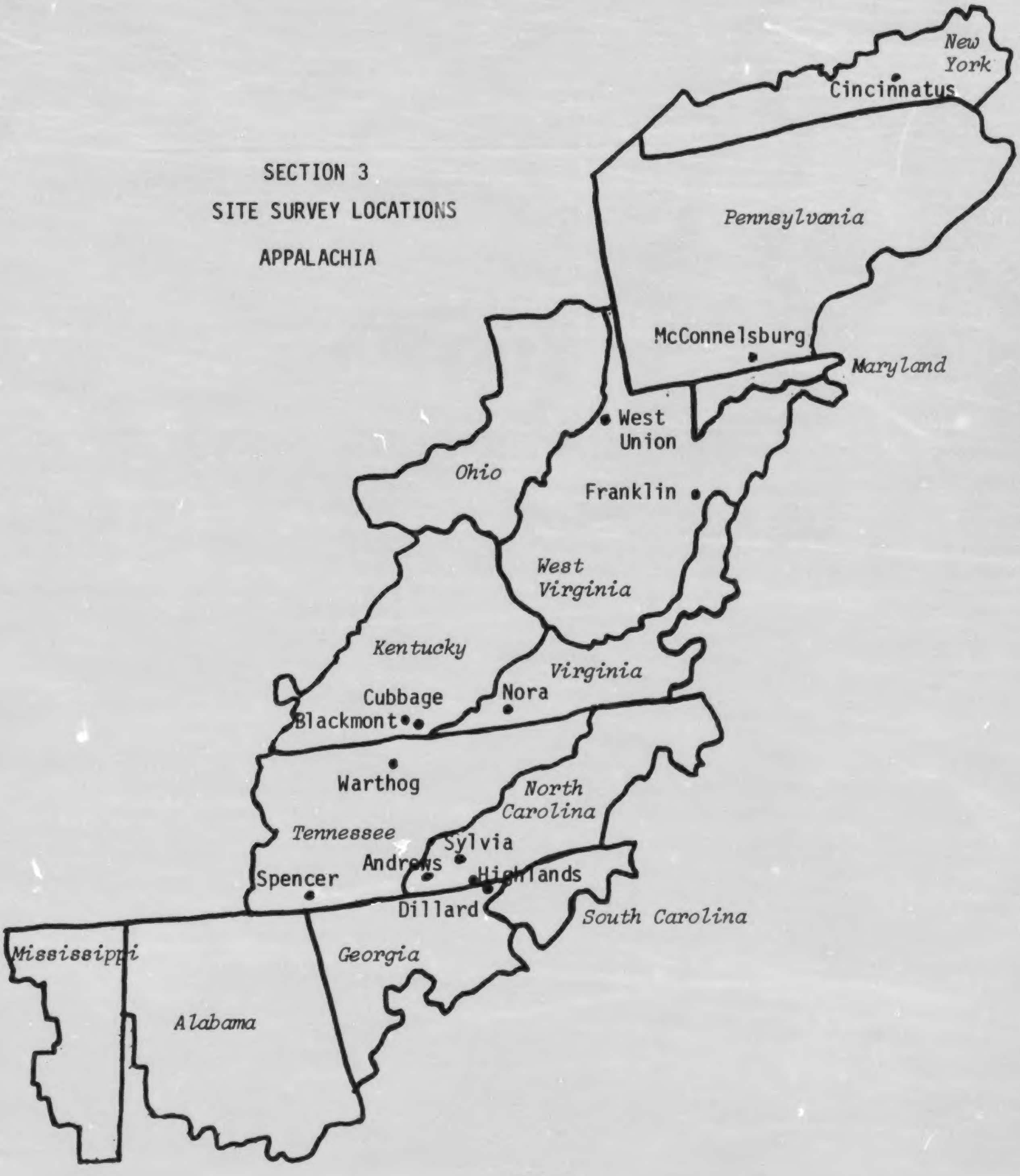
COMMENTS

- Only three of the 279 translator stations operating in Montana carry public television.
- Northwest corner of Montana (around Kalispell) receives KSPS-Spokane via cable.
- On the western border, central longitude (around Missoula) receives KSPS-Spokane via cable.
- A belt of communities from border to border in the southern part of Montana receive KUED-Salt Lake City via cable.
- Northern and central parts of Montana do not receive any public television signals.
- Extreme southwest and northeast corners of Montana do not receive any public television signals.

SECTION 3

SITE SURVEY LOCATIONS

APPALACHIA


New York
Cincinnatus
Pennsylvania
McConnelsburg
Maryland
Ohio
West Union
Franklin
West Virginia
Kentucky
Virginia
Cubbage
Nora
Blackmont
Warthog
North Carolina
Tennessee
Sylvia
Andrews
Spencer
Highlands
Dillard
South Carolina
Mississippi
Georgia
Alabama

COMMENTS

- Commercial and public broadcasting signals are readily available in most parts of Appalachia.

SECTION 4

TECHNICAL DETERMINATION

To assist in the determination of custom delivery options to provide public television service in rural communities, each survey team was required to become familiar with principles of television coverage, factors influencing television coverage, the use and interpretation of contour maps, VHF and UHF differences, head-end systems, transmit and receive facilities, local origination equipment, etc.

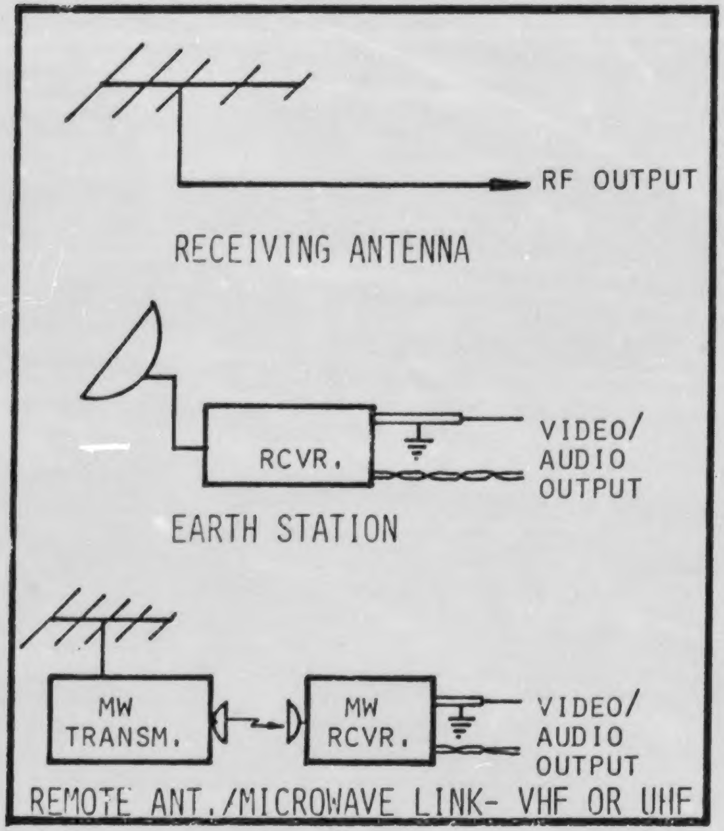
Each survey team was provided with a resource package which included guidelines and procedures for determining custom delivery requirements and the associated costs to enable rural communities to receive public television.

Site visit meetings were designed to stimulate discussions to determine the custom delivery option most consistent and expedient with the community's requirements and resources. The procedures and instrumentation assisted the survey team in comparing and contrasting technical systems, suggested installation sites, restrictions, estimated costs and other information to support survey team recommendations for a custom delivery option.

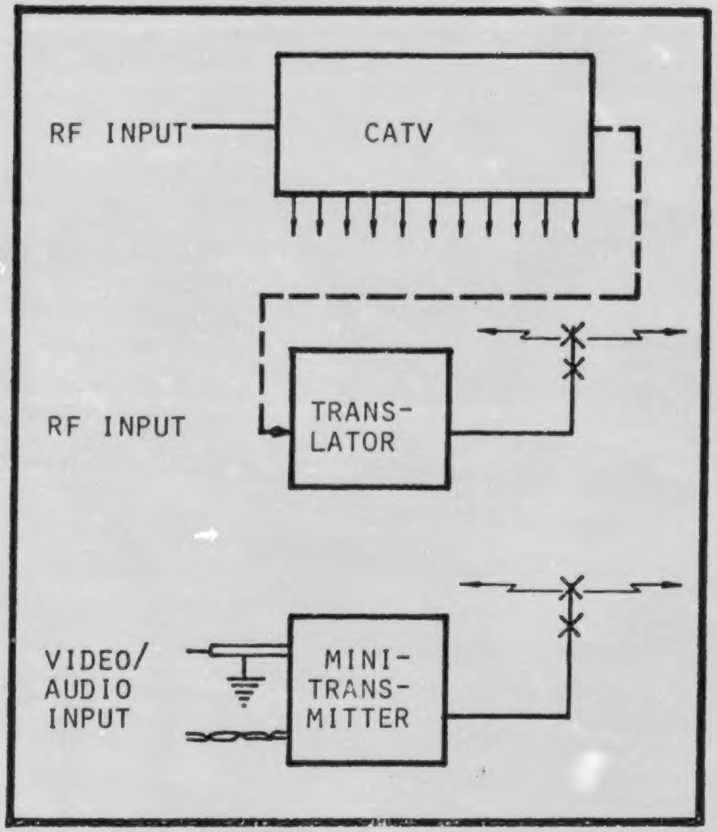
This information base was the outcome of the training session and field activities resulting in recommendations for each participating community. Several recommendations mentioned in the field survey suggested a hybrid system and are worth noting.

- Cable systems serving rural communities are often unable to economically justify distribution beyond the community because of low population density. Extending the signal beyond the cable system through the use of a translator is one possibility. It may, however, be in conflict with cross-ownership rules.
- The installation of a small earth station and mini-transmitter at a location that can serve a number of communities was also suggested in several of the community meetings. Specific mention was made of XL Heights, a location 8 miles west of Butte, Montana, which can broadcast to a number of communities in the region. Shared use of a 100 watt VHF mini-transmitter by six communities would realize economies and more efficient spectrum utilization, in contrast to six small earth stations and six 10 watt VHF mini-transmitters serving six individual communities in proximity to XL Heights.

The preceding charts and tables summarize the technical findings and survey activity for each community. The Training Manual, developed by PSSC, includes detailed materials used in the study.

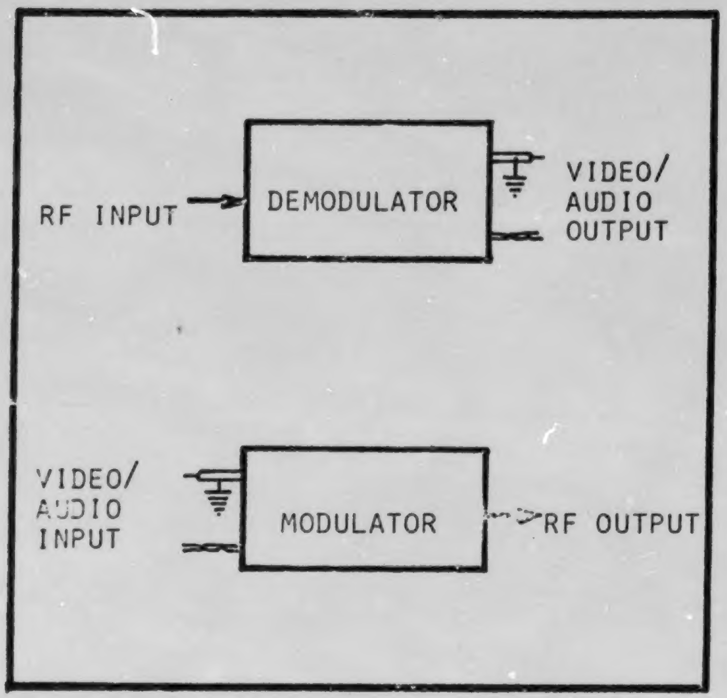

RF OUTPUT
RECEIVING ANTENNA
RCVR.
VIDEO/
AUDIO
OUTPUT
EARTH STATION
MW
TRANSM.
MW
RCVR.
VIDEO/
AUDIO
OUTPUT
REMOTE ANT./MICROWAVE LINK- VHF OR UHF

HEAD ENDS


RF INPUT
CATV
RF INPUT
TRANS-
LATOR
VIDEO/
AUDIO
INPUT
MINI-
TRANS-
MITTER

DISTRIBUTION/TRANSMISSION

DELIVERY OPTIONS


RF INPUT
DEMODULATOR
VIDEO/
AUDIO
OUTPUT
VIDEO/
AUDIO
INPUT
MODULATOR
RF OUTPUT

INTERFACE HARDWARE

1 RECEIVING ANTENNA - CATV
2 RECEIVING ANTENNA - TRANSLATOR
3 RECEIVING ANTENNA - TRANSMITTER
4 EARTH STATION - CATV
5 EARTH STATION - TRANSLATOR
6 EARTH STATION - TRANSMITTER
7 REM. ANT./MW LINK - CATV
8 REM. ANT./MW LINK - TRANSLATOR
9 REM. ANT./MW LINK - TRANSMITTER
10 CATV - TRANSLATOR

POSSIBLE COMBINATIONS

DELIVERY OPTIONS

SECTION 5

LOCAL ORIGINATION

A secondary purpose of the study was to determine community interest in originating local programs by establishing a low-cost production facility in proximity to the small earth station/mini-transmitter. Accordingly, materials were developed on technical and financial requirements for local origination. These materials, found in the Training Manual, were included in the training session for site survey personnel and were also discussed with each community surveyed.

A majority of communities surveyed, however, indicated little or no interest in local origination. This attitude was evident in responses to the survey questionnaire and was expressed by various community members in both individual and group meetings. While these findings may reflect a lack of resources (both economic and personnel) to commit to such an effort and lack of personnel with experience or expertise in using program production equipment, they perhaps represent a more realistic perception of needs and priorities relative to the use of television in rural communities. The concern expressed in most cases was to acquire public television service in the most practical and economical manner.

Suggested equipment and facilities and associated costs for local origination are found in the Training Manual.

SECTION 6

LEGISLATIVE AND REGULATORY HIGHLIGHTS

Rural Electrification Act.

The Rural Electrification Act of 1936 was originally enacted to provide a source of money at low interest rates for development of electrification facilities and service in rural areas. In 1949, an amendment was added to the Act to authorize the REA administrator to provide loans to rural telephone companies on the same basis as rural electric companies. No mention was made in the Act regarding the funding of CATV (Community Antenna Television) systems under the loan program until 1962 when it was amended to exclude CATV from the program.

Recently, the National Telephone Cooperative Association (NTCA) has proposed that the REA Act be amended to make REA funds available for construction and operation of CATV facilities. Two specific modifications proposed by NTCA are of interest to this project: (1) an amendment to include CATV in the definition of "telephone service" and (2) a modification to permit REA loans for CATV facilities to be made to telephone systems serving less than 30 subscribers per route mile including cities, towns and villages with populations of less than 50,000. These modifications are contained in a Bill which was introduced in the Senate by Senator John Melcher (D-Montana) and in the House by Representative Charles Rose (D-South Carolina).

The first REA loan for extending broadband services to a rural community has been granted to a telephone company in Footville, Wisconsin, that is going to offer cable television. However, the loan cannot be used for television broadcast service due to federal restrictions. Television facilities will be funded with a separate loan from a private bank.

Rural Development Act.

The Rural Development Act of 1972 was a major amendment to the Consolidated Farmers Home Administration Act of 1961. The Rural Development Act gives the Secretary of Agriculture the authority to make funds available for rural development projects of all kinds. This Act establishes a revolving fund, the Rural Development Insurance Fund, with very broad authority to make guaranteed and insured loans available for a wide variety of rural projects including water treatment plants, volunteer fire departments and small private businesses.

Because of its extremely broad scope, it is possible that this revolving fund can be used to help finance rural CATV projects; in fact, funds available under the Act are currently being used for installation of a cable/microwave demonstration project in Trempealeau County, Wisconsin. However, it is highly doubtful that the insurance fund can be used to finance CATV development if such development is to be done in conjunction with rural telephone projects. At present, rural telephone is financed exclusively through the REA, not the Rural Development Act, and recent Congressional action makes it very clear that there is no intention of allowing this to be changed.

FCC Cross-Ownership Rule.

The historical basis for the ban on cross ownership of telephone companies and CATV systems relates to the poles and conduit space owned by telephone companies. By either denying the cable companies pole rentals and conduit space or by charging exorbitant fees for the rentals, the telephone companies could force CATV operators to the point where they would prefer to lease the system from the telephone company rather than build their own.

In 1968 the FCC determined that the construction of cable systems by common carriers represented an interstate common carrier activity, and that "construction by a telephone company for an affiliated CATV operator calls for careful scrutiny on the part of the Commission in order to insure against wasteful duplication or unnecessary construction." However, in 1968 the telephone carriers were still involved in CATV. In 1970, the FCC promulgated rules prohibiting the telephone companies from furnishing CATV distribution services through an affiliated CATV system within their own telephone operating territory. The carriers were required to discontinue providing CATV service directly or through an affiliated or related CATV system within four years. This rule, however, also provided for waiver of the restriction with show of good "cause."

In November 1976, the National Telephone Cooperative Association (NTCA) requested a general waiver of the colocation cross-ownership rule. The petition seeks a general waiver of the rules that prohibit television and other broadband communications facilities to be owned and operated by the telephone company in the rural areas. The petition states that the general waiver should apply to cooperatives and other telephone companies with less than 30 subscribers per mile for the purpose of providing community antenna and cable television facilities and services in any area of the United States not included within the boundaries of any incorporated or unincorporated city, village or borough having a population in excess of 50,000 inhabitants. The granting of this waiver at the present time would make nearly all of the telephone companies which are financed by REA eligible for this waiver and would affect over 860 telephone companies.

In December 1976, the United States Independent Telephone Association filed a Statement of Support for the NTCA position. The Office of Telecommunications Policy sent a letter to the chairman of the FCC in January 1977, which also supported, in principle, removal of the cross-ownership rule. It did not, however, endorse any changes in the method of financing such operations. Also in January, the National Cable Television Association (NCTA) filed comments on the NTCA petition. Although it supports NTCA efforts to serve rural areas, NCTA suggests that the current procedure for waivers be clarified rather than a general waiver procedure. NCTA suggests that the Commission adopt a definition based on those communities which could not be served by CATV. NCTA suggested 25 or fewer potential subscribers per route mile. It also suggested that in addition to population density criterion, the maximum number of subscribers which the petitioning telephone company might serve should be specified. The suggested maximum promoted by the telephone industry was 150,000 but NCTA prefers a more conservative estimate of 50,000 to 75,000 subscribers.

Cable-Translator Cross-Ownership Ban.

The FCC ban of co-ownership of cable and translators in the same community states: *"No cable television system (including all parties under* *common control) shall carry the signal of any television broadcast station if such system directly or indirectly owns, operates, controls, or has an interest in......a television translator station licensed to the community of such system."*

The FCC justification for the ban specifically involving translators is contained in the Second Report and Order concluding Docket No.18397, which dealt principally with the broader issue of cable-broadcast station cross-ownership and which is also barred. The discussion regarding translators is confined to a single paragraph which states: *"We also believe that cross-ownership of a translator station and a CATV system serving the same community should be prohibited. In our case-by-case consideration of existing translator-CATV cross-ownerships, we have observed that such combinations are unlikely to yield the best translator service to the public. Here, too, exceptions will be considered upon a showing that in the absence of cross-ownership there would be no increase in broadcast or CATV service to the public."*

Concern over this rule arises principally from the fact that joint, cooperative use of cable systems in villages and translators in outlying, very low density rural areas can be an efficient means of serving a large, heterogeneous area such as a rural county. Hybrid systems of this type were hypothesized and studied by the Denver Research Institute in studies sponsored by OTP. Regional planning to upgrade television might, as suggested by DRI, involve a franchising authority granting a cable company the franchise to provide cable service (including interconnection of institutions to support a variety of social services) in relatively high density areas.

Local Origination.

In 1976 Congress passed legislation that would allow translator stations to originate limited programming. The legislation also allows certain translator stations to operate unattended. The National Association of Broadcasters (NAB) was able to secure language in the Committee reports that makes it clear that the FCC is not to allow translators to operate as broadcasters, and that the rules to govern program origination should be quite restrictive.

In April, 1977, NAB filed a letter supporting a request submitted by the Washington State Broadcasters Association for a ruling on the practice of some UHF translator stations of substituting locally originated commercial advertisements for those broadcast by their primary stations. The chief of the Broadcast Bureau responded that the Commission was making an inquiry as to whether or not this practice violated Commission rules or policies. As of June, 1978, the inquiry had not been completed.

FM Microwave Translator Feeds

In December, 1977, the FCC relaxed its rules to allow translator stations to retransmit television signals from any suitable source, including auxiliary microwave stations, common carrier microwave stations, and cable television relay stations (CARS). Translators remain subject to the FCC's eligibility and licensing requirements. Prior to this, translators had to depend primarily on off-the-air VHF and UHF television signals for programming. The new rules will allow better picture quality and will make possible more relay stations without signal quality degradation.

However, these changes require translator equipment modifications. The primary change in equipment design is the use of a modulator in place of the translator receiver; the result is a "modulated translator" which is fed with conventional video and audio input signals. Such a "modulated translator" is virtually identical with a very low-power transmitter, or mini-transmitter.

Actions/Decisions/Next Steps

If the rural public television system is to become operational, some modifications in FCC regulations will be required. They include:

1. A change in the licensing rules to provide for the operation of mini-transmitters in conjunction with small earth stations to provide public television coverage for small rural communities not served by public television stations. Such mini-transmitters associated with a small earth station could be licensed under rules similar to those which now apply to unattended translators.

2. A change in general waiver procedures for cable-translator co-ownership to allow hybrid systems approved by local franchising authorities to operate in rural areas.

SECTION 7
FUNDING POSSIBILITIES

Cost, of course, is the major factor in any developmental effort. The realization that outside support will be required to implement an operational plan for extending public television to rural America was the impetus for including suggested funding sources in this report. The funding sources were selected because they specifically addressed needs of rural communities. No attempt was made to exhaust possibilities. The intent was rather to provide, for discussion purposes, basic information on certain agencies whose mission includes the needs of rural communities. Four funding categories were discussed: Federal, Foundation, In-state and Other.

Federal

Educational Broadcast Facilities Program (Department of Health, Education and Welfare.)

This program could be a primary source of funding for public broadcasting facilities construction. It offers a method to extend public broadcasting service into rural areas and also helps to establish local service channels. The Facilities Act, proposed by the Administration in October 1977, would give unserved areas, including rural areas, first priority. The Act would also allow direct grants to non-profit groups. No longer would grants have to go through a public broadcasting licensee.

Rural Electrification Administration (Department of Agriculture.)

The current REA program in telecommunications is limited to telephone service but some CATV services and facilities used for educational purposes have been financed by REA. Proposals for amendment of the Rural Electrification Act of 1936 have been received, which would expand REA authorization to loans for expansion of communications facilities for rural communities, independent of the technology used. In 1978, legislation to provide for REA financing of broadband facilities was introduced in the Senate by John Melcher (D-Montana) and in the House by Representative Charles Rose (D-South Carolina).

Revenue Sharing Funds.

These funds, distributed to incorporated communities, could be available for funding a public television technical system provided that the town has no restriction on its own general revenue funds that would prohibit a similar expenditure. The category requirements on federal revenue sharing funds were removed on January 1, 1977.

National Telecommunications and Information Administration.

NTIA was established to assume certain telecommunications functions and responsibilities within the federal government. The focus of NTIA efforts will be information and policy making, although managing federal telecommunications resources, improving the application of telecommunications and information technology will also receive attention. The use of telecommunications to better serve rural communities has also been mentioned as a focal point for NTIA support and assistance. Although the first year NTIA budget was modest, funding prospects for subsequent years are encouraging for rural America.

Bureau of Indian Affairs (Department of the Interior).

The fact that several Indian reservations are located in Montana and Wyoming presents another opportunity to mobilize BIA resources to support public television facilities. Educational opportunities and social welfare improvement traditionally receive strong emphasis in BIA program support.

Farmers Home Administration (Department of Agriculture).

This is an important program that can be adapted or used to secure help for rural communications systems. FmHA has a variety of loans available, and application for them may be made at one of FmHA's county offices, generally located in county-seat towns. Among the loans that might apply to bringing in public television to a rural community are the rural industrialization loans, and community facility loans.

Small Business Administration.

This is another possible resource that can be employed for communications development in rural areas. SBA provides guaranteed, direct or lender participation loans to small business concerns to help them finance plant construction, expand or convert, and to acquire facilities, equipment, supplies or materials.

Economic Development Administration (Department of Commerce).

Another possibility for financial aid in communications development in rural communities is the EDA. The agency's prime function is the long-range economic development of areas with low family income problems and severe unemployment. It helps to develop public facilities and private enterprise to assist in creating new permanent jobs.

Federally Impacted Communities.

Additional sources for possible funding include: The Office of Human Development, Department of Health, Education and Welfare and Community Planning and Development, Department of Housing and Urban Development.

Foundations

Fortin Foundation of Montana. The foundation offers grants largely for hospitals and education.

Stock (Paul) Foundation. This Wyoming-based foundation primarily gives locally, with emphasis on civic development, youth agencies and higher education.

Goodstein Foundation. The foundation offers grants primarily in Colorado and Wyoming, for higher education and hospitals.

Benton (William) Foundation. This foundation has a limited number of grants for communication and media projects.

Mott (Charles Stewart) Foundation. The purpose of this foundation is to support community functions through grants for life-long learning and enrichment. Other activities include family stability, community renewal and better delivery of service. The foundation is a pioneer in the community education concept.

In-state

Translator Tax Districts (Montana).

Under present laws, these districts may be able to provide some funding toward earth station/mini transmitter costs. However, many of the translator taxing districts are presently taxing near or at the $16 per year limit. Because of this factor, funds from this source may be generally limited.

Optional County Tax (Wyoming).

The levying and use of the optional one percent county tax agreed upon by a certain percentage of the people within the county has, in the past, been a valuable source of revenue. Public television equipment and facilities might be financed through this means.

Other

Oil Companies.

In several communities surveyed, certain oil companies provided much of the economic base of the area. In such instances, the oil companies at the corporate level might be approached to assist in bringing in public television to improve living conditions and to provide entertainment as well as educational programs in towns where they had primary interests.

SECTION 8

CONCLUSIONS

1. The proliferation of cable and translator systems has extended commercial television signals to virtually all rural communities.
2. A number of isolated rural communities in Wyoming and Montana with populations under 2,500 do not yet receive public television.
3. In contrast, 11 of the 13 rural communities surveyed in Appalachia receive public television, but coverage is spotty and signal quality is poor.
4. Rural geographically isolated communities are interested in receiving public television.
5. Rural geographically isolated communities could benefit from public television, but exhibit a limited awareness of PBS programs.
6. Costs to extend public television using cable or translator to unserved areas in Montana and Wyoming are prohibitive in most cases.
7. An alternative delivery system that reflects the requirements and resources of unserved communities is desired.
8. New advances in small earth stations and mini-transmitters provide viable alternatives to extend public television to rural America.
9. Use of small earth stations in conjunction with existing cable systems can also extend public television to rural America.
10. Use of translators fed by existing cable systems can extend service to those areas which cannot be served economically by extending the cable system.
11. Rural isolated communities cannot absorb the total cost for improving or extending public television to their communities.
12. Technical and financial support from appropriate agencies will be required to enable unserved rural communities to receive a high quality public television signal.
13. A mechanism will be required to coordinate and manage the planning, development and delivery of public television to rural America.
14. Local origination capability does not appear to be a priority for most rural communities.

SECTION 9

RECOMMENDATIONS

CPB Related

1. CPB should convene a meeting of federal agencies which support programs and services in rural America to discuss the findings and recommendations of the study.
2. CPB should convene a meeting of local, state and regional agencies to discuss the findings and recommendations from the study and to develop strategies for the implementation of an operational plan to extend or improve public television to rural America.
3. To validate the findings from the study, CPB should fund a prototype implementation effort to include a minimum of ten small earth station/mini-transmitter units to extend public television to selected rural communities on an experimental authorization or rule waiver basis.
4. A meeting of federal and non-federal funding agencies should be convened to discuss cooperative funding efforts to support the delivery of services through telecommunications to rural America.
5. Agencies with a national base should be identified to coordinate and manage the implementation of an operational prototype plan.
6. An appropriate organization should be designated to examine and interpret technical, regulatory, programmatic and economic issues which could impede the operational plan for extending public television to rural communities and to suggest appropriate measures to overcome barriers in the implementation process.
7. Initiate rule-making procedures to regularize the use of small earth station/mini transmitter combinations.
8. CPB should develop an informational program to demonstrate how new advances in telecommunications can improve services or alleviate some of the problems of rural America.
9. CPB should develop an informational program to create an awareness and understanding of public broadcasting programs and services.

State/Regional/Federal

1. Plan and schedule a series of follow-up state/regional meetings to discuss implementation strategies for public television in rural communities in Wyoming, Montana and Appalachia.
2. Encourage the creation of a state telecommunication authority or commission to facilitate the establishment of a public broadcasting system in Montana and Wyoming which can assume responsibility for acquiring and distributing broadcast programs and services.

3. Examine enabling translator legislation in Montana to see if mini-translator/earth station systems can be supported within existing legislation as tax districts financed by public revenue.
4. If necessary, encourage the creation of separate enabling legislation to allow for mini-transmitter/earth station system tax districts.
5. Suggest to appropriate Wyoming agencies the creation of enabling legislation similar to that in Montana, enabling mini-translator/earth station system tax districts to be formed and financed by public revenue.
6. Suggest that unserved rural communities affiliate with an appropriate public television station to facilitate the acquisition of public television programs and services.
7. Dedicate a number of designated broadcast hours for distribution of selected programs unique to rural communities.
8. Support pending and proposed legislation to finance and improve broadcasting services in rural America. (See Legislative and Regulatory Highlights.)
9. Petition the FCC to rule favorably on requests to remove restrictions, adopt more flexible regulations and new regulations dealing with the unique small earth station/mini transmitter combination, to facilitate broadcast service delivery to rural America. (See Legislative and Regulatory Highlights.)

Technical

1. Prepare suggestions for existing cable companies and translator associations in unserved communities, outlining requirements for accessing public television.
2. Where existing distribution systems cannot provide public television, encourage the use of small earth stations and mini-transmitters to extend public television service to rural America.
3. Plan and schedule detailed engineering surveys for unserved rural communities interested in receiving public television and able to support such an effort.
4. Encourage, as appropriate, public television access on a county-wide or multi-town basis, using any combination of small earth stations, mini-transmitters, cable, or translators, to realize economies of scale.
5. Coordinate arrangements for frequency searches to determine the availability of VHF and UHF channels which could be allocated for 100 watt or 1000 watt mini-transmitters or translators.
6. Arrange to drop back to 10 watt VHF mini-transmitters or consider the use of UHF in the event a frequency search fails to reveal available VHF channels which could be assigned to specific communities.
7. Avoid, whenever possible, the mixing of VHF and UHF systems in suggesting technical alternatives for accessing public television.
8. Colocate, when possible, any new PTV facilities at existing translator sites.

SECTION 10

IMPLEMENTATION PLAN

To facilitate the implementation of a prototype operational plan to extend public television to rural America, a series of steps have been identified. The procedures, findings and recommendations from this study should serve as the framework for implementing the prototype operational plan. Any implementation efforts will be contingent upon the availability of funds and FCC Rule Modifications to authorize the use of mini-transmitter/small earth stations. The suggested steps are to:

1. Mobilize funding sources.
2. Request FCC approval for experimental authorization or rule waiver to permit implementation.
3. Select communities with greater need for and interest in public television as identified in the study. When possible, locate clusters of unserved communities to realize economies of scale.
4. Collect, compile and review data on selected communities.
5. Refine preliminary recommendations on technical requirements and delivery systems.
6. Notify communities of preliminary recommendations and request indication of continued interest and support for public television.
7. Establish ongoing communication with appropriate broadcasting, regulatory,and other agencies.
8. Prepare letters of agreement between selected communities and management agency to formalize arrangements for detailed engineering survey.
9. Conduct detailed engineering survey.
10. Prepare recommendations resulting from the detailed engineering survey outlining requirements for technical systems, equipment and updated costs.
11. Submit results of the engineering survey to selected communities.
12. Finalize provisions and arrangements for procurement, installation, management and financing.
13. Finalize contractual arrangements for technical assistance and financing with communities electing to participate in the prototype operational plan.

14. Procure, install and test equipment for prototype operation.
15. Initiate procedures for training of site personnel to operate and maintain equipment.
16. Transfer focus of control from management agency to appropriate state/regional public broadcasting authorities responsible for establishing processes and procedures for ongoing instructional programming needs and funding.
17. Validate implementation plan procedures for subsequent utilization in providing public television to rural America.

SECTION 11

SUMMARY

The potential of communication satellites for public service has been the subject of much discussion for almost a decade. Unfortunately, the expectations of yesterday have not been realized. The technical systems projected for the mid-seventies did not materialize in affordable form, the prospects for generating completely adequate revenues to support the ambitious plans for public service users never developed, and a strong, monolithic leadership did not emerge.

The responsibility to serve rural communities is another issue. Although much has been accomplished through telecommunications technology, 1978 continues to find rural communities with less than adequate public broadcasting services.

In retrospect, the public service recognizes that private enterprise will not assume the responsibility for extending broadcast services to rural America. The profit-making potential is limited within the present regulatory framework. Similarly, if left to individual communities, little will occur. A simple explanation: economies of scale require orderly aggregation.

Why do rural communities continue to be underserved? It has been postulated that rural communities do not possess the economic or political base to foster needed programs and services. Accordingly, without the base of operations, advancement is difficult. It is evident that without national leadership and national policy, rural telecommunications will not come about.

The availability of technical systems is no longer an excuse. The costs for implementation are modest. Some agency, however, must assume the leadership role to develop a national base for a rural public broadcasting system. CPB has that opportunity.

APPENDIX A

STATE AND REGIONAL HIGHLIGHTS

Wyoming and Montana

Wyoming, the ninth largest state, encompasses almost 98,000 square miles and may be best known for Yellowstone National Park and the Teton Mountain Range. Rich in natural resources, the "equality" state is recognized for its mining, agriculture, and manufacturing products. Among these are natural gas, coal, iron ore and uranium, as well as cattle, wheat, beet sugar, flour, processed meats and wood products.

Montana, the nation's fourth largest state, includes over 147,000 square miles of land. Glacier National Park, the Custer Battlefield National Monument and a portion of the Continental Divide are all within its boundaries. The "treasure" state is endowed with natural resources in addition to millions of acres of range and cropland. Copper, timber, oil and natural gas as well as livestock, wheat, barley and hay are some of the state's prominent commodities.

Numerous comparisons may be made of Montana and Wyoming based on this study's survey sites and background research. With a population of 746,224, Montana has twice as many people within its borders as Wyoming with a population of 332,146. Montana also has a greater population density with 5.07 people per square mile than Wyoming with 3.39.

Montana, with 56 counties, has more than twice as many as Wyoming with 23. However, Wyoming with an average of 14,441 people per county has a greater average county population than Montana with 13,326.

Comparing educational systems, Montana with 614 school districts (579 operating) has six times as many districts as Wyoming with 90.

All of the Montana towns selected for the survey are incorporated with a mayoral system of government. Three Wyoming communities do not have mayors or a related government system.

The possibility of bringing in public television had been discussed prior to the survey in about one-half of the communities in the study. About one-fifth of the towns surveyed have television clubs or associations.

The Wyoming towns surveyed are primarily Anglo with only a scattering of minority representation. Browning, Montana, located on an Indian reservation, is the only site with significant minority representation.

Unemployment does not appear to be a major problem in most of the towns surveyed, although five of the Montana communities reported some unemployment. Ranching and/or agriculture provide major economic bases in all towns surveyed with mining and energy-related industries providing other employment opportunities.

All sites surveyed are small, ranging from one to four square miles in size, and most are isolated, being located 100 or more miles from the nearest city of 50,000 or more population.

Seasonal impact is rarely felt in Wyoming towns, while most Montana communities are affected to some degree by seasonal factors. Tourism and agriculture are the leading factors causing seasonal impact.

Recreational and entertainment options are limited in most towns surveyed. At least one-half of the survey sites had few, if any, sports and recreational facilities. Most communities, however, enjoy watching high school athletics. The reports indicate that most Montana and Wyoming towns are fairly satisfied with their leisure and recreational opportunities.

The schools are a focal point in all the communities. While Wyoming communities report that over 50 percent of their high school graduates continue their education at a college or university, less than 50 percent of Montana graduates continue their education beyond high school. Most Wyoming towns have at least one adult education course available in the community on a regular basis. Montana towns reported that adult education is available on a very limited basis. Overall, most towns are not satisfied or only fairly satisfied with the educational opportunities available to them.

All towns surveyed have a public library either in town or nearby. Library holdings were surprisingly large for the size of the communities.

Weekly newspapers are available in 16 of the Montana towns surveyed. Four Wyoming towns have a weekly paper and two have weekly pages in the newspaper of a larger town nearby. Good quality radio signals are received in all but one of the towns surveyed.

Appalachia

Appalachia, or the Appalachian Region, is a land of contrast. The region includes all or part of thirteen states: Alabama, Georgia, Kentucky, Maryland, Mississippi, Ohio, New York, North Carolina, Pennsylvania, South Carolina, Tennessee, Virginia, and West Virginia.

The Appalachian portion of these 13 states represent 397 counties and a population of 19,027,000. As a unit, the Appalachian states have a population density of 98 people per square mile and a population of 76,064,000.

The average land area for counties of the thirteen Appalachian sites is 405.4 square miles, with a range of 254 to 695. The population in these counties range from 6,389 to 45,895 with an average of 15,131.

The Appalachian Region is surrounded by mountains that hold a wealth of natural resources. Yet these mountains have, for years, formed a barrier between the Appalachian people and the culture beyond. The rugged terrain has held back both progress and efforts to help solve the area's problems.

Demographic and geographic characteristics impede the economic development of the Appalachian Region. Among these characteristics are inadequate transportation and communications systems, insufficient skills and lack of facilities for training and re-training the area's people. As a result, low economic opportunity levels cause a large outward migration of workers and their families, further reducing the demand for economic progress.

Coal mining, manufacturing and farming provide major employment bases. Most of the sites reported serious unemployment problems. The average labor force per county is 5,170 persons with an average median income of $5,495. The average number of citizens over 65 in these counties is 10.8 percent with a range of 8.5 to 16.5 percent.

Elementary school average attendance in these counties is 2,521; secondary school, 1,063; and college, 558. The biggest discrepancy among the towns is in college attendance. College students ranged from zero in Van Buren County, Tennessee, to 3,103 in Jackson County, North Carolina.

At least one elementary and one high school are located within six miles of the towns surveyed. Trade schools exist in four of the communities and are within commuting distance in four other towns. One town reported having a college located in town, and five others having a college within 40 miles.

Students who continue their education after high school range from 10 to 70 percent. Adult education courses are available in most towns. Libraries are also evident in the majority of communities. Overall, 11 of the communities expressed at least fair satisfaction with their educational opportunities.

Recreational activities in the towns tend to center around school athletic events, community-sponsored activities and outdoor sports.

While several of the communities have a local weekly newspaper, residents depend primarily on radio and television for regional, national and international news. Three of the towns have local radio stations and most have access to regional radio stations.

The observations noted for Wyoming, Montana and Appalachia are not meant to represent all possible comparisons, the intent is to convey a feeling or awareness for rural communities that may lead to a better understanding of life in rural America.

APPENDIX B

RELATED STUDIES

The Corporation for Public Broadcasting has funded several related studies to examine requirements, costs and availability of equipment and facilities to improve public television services to rural America. The findings from these studies complemented the Public Service Satellite Consortium project.

The first study was an engineering report on "Unattended Low-Power Television Transmitter Designs Suitable for use with Satellite Earth Stations" by Kessler Associates. The intent of this study was to determine the costs and availability of hardware and to establish low-power transmitting systems to deliver public television service to rural, sparsely populated areas. The findings from this report were incorporated in Phase I documentation activities. The contour maps from the report were included in the training package for site survey personnel. Additional information from the report was also utilized in Phase III.

In August of 1977, EDUTEL Communications and Development Inc., completed a related study on the design of unattended video receive-only earth terminals at 12 GHz and 2.6 GHz. The study examined design procedures and equipment recommendations for 12 GHz and 2.6 GHz television receive-only terminals which can be utilized in conjunction with TV translators in the power range from 10 watts through several kilowatts. This study was also utilized as a basis for further systems consideration in the PSSC project.

A second study by Kessler Associates, "STEPS," is presently being conducted. Results from "STEPS," essentially a theoretical study, can be compared and contrasted with the results from the field study conducted by PSSC.

Several other studies were reviewed and, as appropriate, incorporated in Phase I documentation efforts. These studies included:

> Broadband Communications in Rural Areas, by Paul Bortz and others, Denver Research Institute, November 1973.
>
> The Feasibility and Value of Broadband Communications in Rural Areas, U.S. Congress, Office of Technology Assessment, April 1976.
>
> Planning for Rural Telecommunications Systems: Phase I - A Methodological Approach to Community Needs Analysis, by Peg Kay and John F. Kramer, Office of Telecommunications Policy, January 1977.

APPENDIX C

PROJECT TASKS AND SURVEY PROCEDURES

Project Tasks

Phase I: Development of Information Base

- .PSSC and CPB agreed on procedures for the project.
- .Reviewed studies relating to public television for rural audiences.
- .Compiled up-to-date information on small earth stations, mini-transmitters, cable systems and translators.
- .Compiled information on facilities, equipment and associated costs for limited local origination capability.
- .Finalized screening criteria for selection of rural communities.
- .Identified, screened and ranked rural communities to be surveyed.
- .Developed methodology for site surveys.
- .Developed procedures for training site survey personnel.
- .Examined existing and proposed state and federal statutes.
- .Identified technical, financial and management requirements for small earth stations, mini-transmitters, cable systems and translators.

Phase II: Field Activities

- .Met with representatives of National Translator Association and National Cable Television Association.
- .Contacted representatives from local, state, regional and national agencies to discuss project and solicit support.
- .Identified and trained site survey personnel.
- .Selected and notified rural communities to be surveyed.
- .Identified and contacted local agencies, institutions, organizations and individuals to be involved in the site survey.
- .Formalized arrangements for site surveys.

- .Conducted prototype site survey.
- .Refined site survey methodology, as appropriate.
- .Conducted site surveys.

PHASE III: Analysis

- .Analyzed information from site surveys.
- .Determined requirements and costs for gaining access to or improving public television service.
- .Determined requirements and costs for limited local origination capability.
- .Contacted manufacturers and providers of broadcasting equipment and facilities.
- .Formulated options to implement operational public television service for each rural community surveyed.
- .Prepared final report outlining options, recommendations and procedures to extend public television service to rural America.

Survey Procedures

PSSC developed the following survey procedures in the conduct of this study. Procedures included the development of a process for identifying, screening and selecting communities to be surveyed, and for conducting the site survey itself.

- -Reviewed various documents, demographic information and requested input from state agencies to determine areas which did not receive public television.
- -Compiled a list of potential sites to be surveyed. (Thirty-two communities were identified in Montana, fifty-four in Wyoming.)
- -Developed phone survey procedures for use in preliminary screening to determine community interest in receiving public television and willingness to participate in site survey.
- -Identified a contact person (mayor, town clerk, etc.,) in each community.
- -Conducted phone survey of potential sites.
- -Identified 22 communities in Montana and 24 in Wyoming which indicated an interest in receiving public television and a willingness to participate in the site survey.
- -Finalized selection of 18 sites in Montana and 18 in Wyoming.
- -Confirmed selection as a survey site with contact person at each site both by phone and in writing. Contact person was given the names of survey team members and approximate date when team would call to set up an appointment. PSSC requested

that contact person inform other community leaders (educators, business people, government employees, translator operator, etc.) of the site survey and convene a meeting of townspeople to meet with survey team.

-Conducted a two-day training session for all site survey personnel, and developed a training manual which included detailed materials used in site surveys.

-Provided survey teams with assigned list of sites to be surveyed, name of contact person, telephone number, and selected information on community compiled from the phone survey.

-Survey teams contacted each community to set up appointment and informed PSSC as to date, time and place of each scheduled meeting.

-PSSC developed a composite itinerary and made arrangements to visit with each survey team in the field.

-Although individual site surveys followed a slightly different format because of community preference and team choice, in general each survey included a group meeting with town leaders, individual interviews with selected townspeople, and a physical survey of the town. When appropriate, team members also visited existing translator sites.

-Survey teams completed required individual site reports within three days of each survey and mailed them to PSSC. A final site report outlining composite findings, observations, and recommendations was also prepared. Sample reporting forms appear in Appendix F.

-An appropriate acknowledgement was sent to each participating community in Montana and Wyoming.

-Specific recommendations were prepared for each participating community, suggesting alternatives to gain access to public television service. A sample follow up letter sent to each community surveyed in Montana and Wyoming is found in Appendix E.

-Follow up, as appropriate, with other state, regional, and national agencies contacted in the conduct of the study was also completed.

APPENDIX D

TRAINING MATERIALS*

I. DEFINITIONS AND DISCUSSIONS OF BROADCASTING CONTOURS

- A. Coverage Contours
  - a. Description and Definition
    - 1. Location and Time Variability Characteristics
  - b. Classes of Service
- B. Topographic Contours
  - a. How to Interpret

II. BASIC PRINCIPLES OF TELEVISION COVERAGE

- A. Definition of TV Coverage
- B. Factors Influencing TV Coverage
  - a. Transmitter Location
    - 1. Terrain Advantage
    - 2. Terrain Disadvantage
  - b. Height Above Average Terrain (HAAT)
  - c. Effective Radiated Power (ERP)
  - d. Antenna Horizontal Pattern
    - 1. Non-directional Circular Pattern
    - 2. Directional Non-circular Pattern
      - i. Unidirectional
      - ii. Figure Eight
      - iii. Peanut
      - iv. Cardiod
      - v. Skull
- C. Differences in Coverage Between VHF and UHF
  - (1) Channels 2 - 6
  - (2) Channels 7 - 13
  - (3) Channels 14 - 83

*excerpted from Training Manual

III. HEAD END SYSTEMS
   A. Satellite Earth Station
   B. Local VHF/UHF Antennas
   C. Remote Earth Stations, VHF/UHF Antennas Systems and Microwave Interconnect

IV. MINI-TRANSMITTER SYSTEMS
   A. VHF & UHF
   B. Exciter/Modulators
   C. Power Amplifier 10 Watts & 100 Watts
   D. Mini-Transmitter-To-Antenna Transmission Line
   E. Transmitting Antenna Supports
      a. New Tower or Existing Structures
   F. Low-cost Transmitting Antennas

V. TRANSLATORS
   A. Basic Components
   B. VHF-to-UHF
   C. UHF-to-VHF

VI. HARDWARE FAMILIARIZATION
   A. Pictures and Brief Discussion of Typical Equipment Modules

VII. EQUIPMENT PACKAGE COST ESTIMATES
   A. To include a special low-power unit for very small communities which will be less than half the cost of the 30 watt ERP unit presented in CPB Mini-Transmitter Report dated August 31, 1977
   B. Capital Cost Estimates for 5 Meter TVRO Earth Station
   C. Capital Cost Estimates for 10-watt VHF (50-watt ERP) and 100-watt UHF (500-watt ERP) Translators
   D. Capital Cost Estimate for Remote Pick-Up Antenna and Microwave Link
   E. Installation Costs and Annual Maintenance Costs for A, B, C, & D above

VIII. BRIEF REVIEW OF APPLICABLE FCC REGULATIONS

A. Translators

- a. Maximum VHF Translator Power
  - 1. One Watt East of the Mississippi River
  - 2. Ten Watts West of the Mississippi River
  - 3. 100 Watts on an Assigned Channel
- b. Maximum UHF Transmitter Power
  - 1. 100 Watts
  - 2. 1000 Watts on an Assigned Channel
- c. No Limitations on ERP and Antenna Height by FCC. However, considerations must be given to FAA (Federal Aviation Administration) air-space restrictions
- d. Unattended Operation Permissible, Provided:
  - 1. If translator cannot be reached at all hours and in all reasons, means shall be provided so that the transmitting apparatus can be turned off and on at will from a remote which is readily accessible at all hours and in all seasons
  - 2. The translator shall be equipped with suitable automatic circuits which will place it in a non-radiating condition in the absence of an input signal
  - 3. The translator apparatus and the on-off control (if at a location other than the translator site) shall be adequately (locked) protected against tampering by unauthorized persons
- e. Technical Personnel Requirements
  - 1. Second-class operators license required if adjustments are to be made which affects emission
  - 2. Operators license not needed by installor of FCC Type accepted equipment but must have sufficient skill to follow manufacturers instructions
  - 3. Simple maintenance such as the replacement of tubes, fuses, or other plug-in components and adjustments which require no particular technical skill may be made by an unskilled person (underlining added)

4. FCC must be supplied with the name, address and telephone number of a person or persons who may be contacted to secure suspension of operation should such action be deemed necessary by the FCC

f. Co-Channel and Adjacent Channel Mileage Separation Requirements (See Section 74.702 of the FCC Rules and Regulations)

g. Translator Station Identification Requirements
Either:
1. Automatic identification in international morse code at least once per hour, or;
2. By arranging for the primary station to transmit an identification as per Section 74.783(a)(2) of the FCC Rules and Regulations

B. Mini-Transmitters

a. No provisions in the FCC Rules and Regulations for operating mini-transmitter. Therefore, for licensing purposes it will be possible to consider licensing under the following options:
1. Translators with provisions for local origination (a waiver of the rules will be required with this procedure since the current rules limit local origination (as a mini-transmitter) to UHF translators broadcasting still photographs, slides, and recorded voice announcements
2. As an experimental television broadcast station under Subpart A Section 74.101 of the FCC Rules and Regulations
3. A successful petition to change the FCC Rules and Regulations to regularize mini-transmitters under a set of rules similar to the current rules governing translator operation

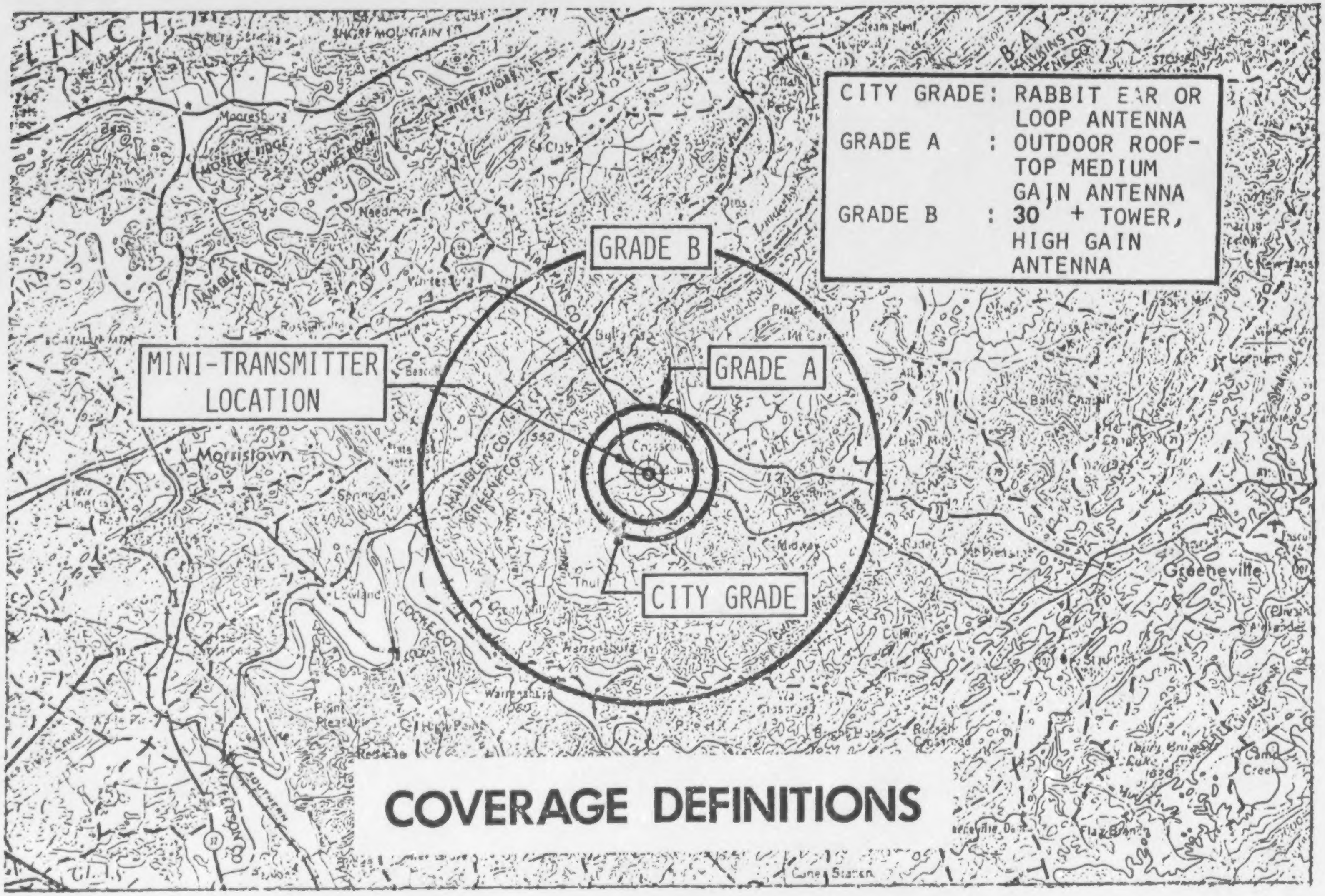
IX. AIR SPACE CONSIDERATIONS FOR TOWERS

A. A tower can be constructed without FAA approval provided the overall height of the structure does not exceed any nearby natural elevation by more than 20 feet

B. FAA approval needed for almost all towers near airports

C. Detail criteria found in Federal Air Regulations Part 77 "Objects Affecting Navigable Air Space"

D. Excerpts from the Federal Aviation Regulations Part 77 of the most important criteria appears on the front (yellow page) of FAA Form No. 7460-1 "Notice of Proposed Construction or Alteration"


GRADE B
GRADE A
MINI-TRANSMITTER LOCATION
CITY GRADE
Morristown
Greeneville
HAMBLEN CO.
GREENE CO.
COCKE CO.
SHORT MOUNTAIN
LINCH
BAYS

CITY GRADE: RABBIT EAR OR LOOP ANTENNA
GRADE A : OUTDOOR ROOF-TOP MEDIUM GAIN ANTENNA
GRADE B : 30' + TOWER, HIGH GAIN ANTENNA

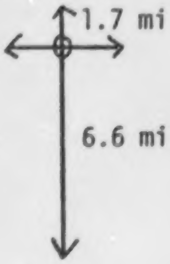
COVERAGE DEFINITIONS

Appendix D
Training Materials

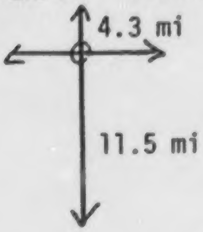
MAXIMUM AND MINIMUM DISTANCES IN MILES TO GRADE B CONTOURS

VHF
(Ch 2 - Ch 6)

Trans. Power: 10 Watts
System ERP: 50 Watts

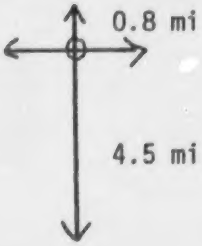


Trans. Power: 100 Watts
System ERP: 500 Watts

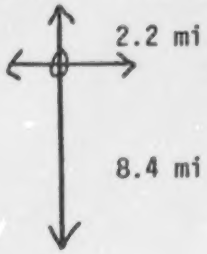


VHF
(Ch 7 - Ch 13)

Trans. Power: 10 Watts
System ERP: 50 Watts

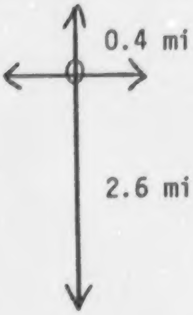


Trans. Power: 100 Watts
System ERP: 500 Watts

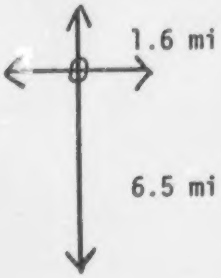


UHF
(Ch 14 - Ch 69)

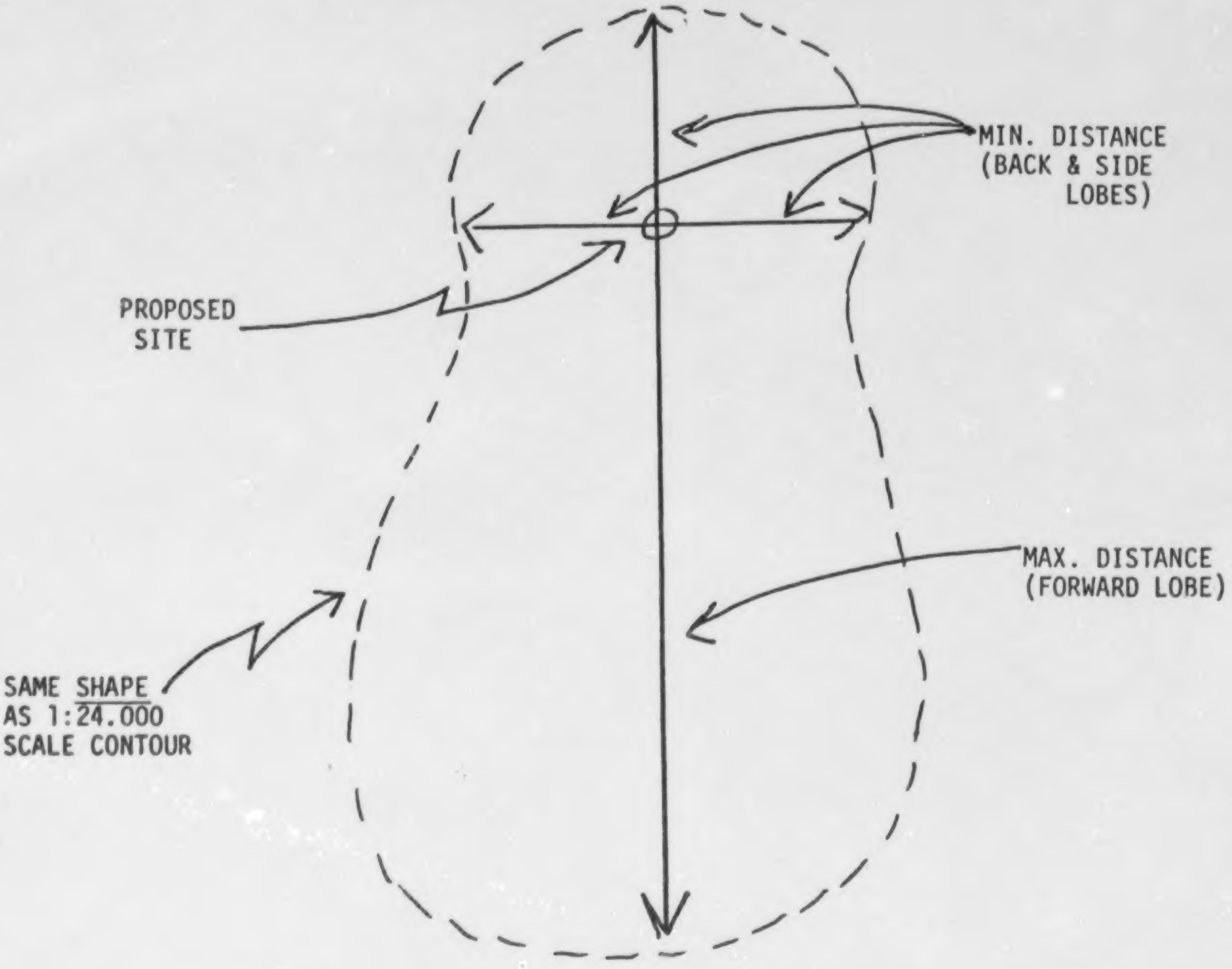
Trans. Power: 10 Watts
System ERP: 60 Watts

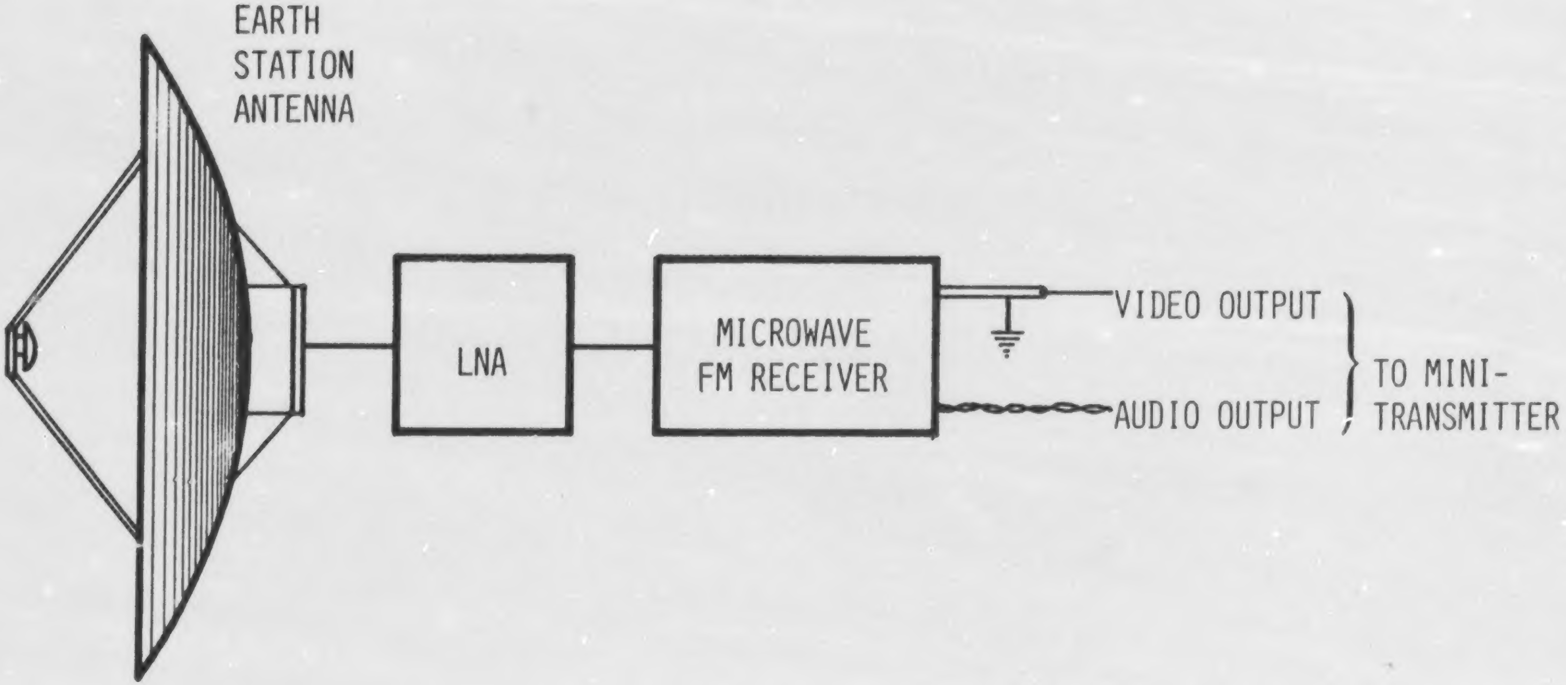


Trans. Power: 100 Watts
System ERP: 600 Watts

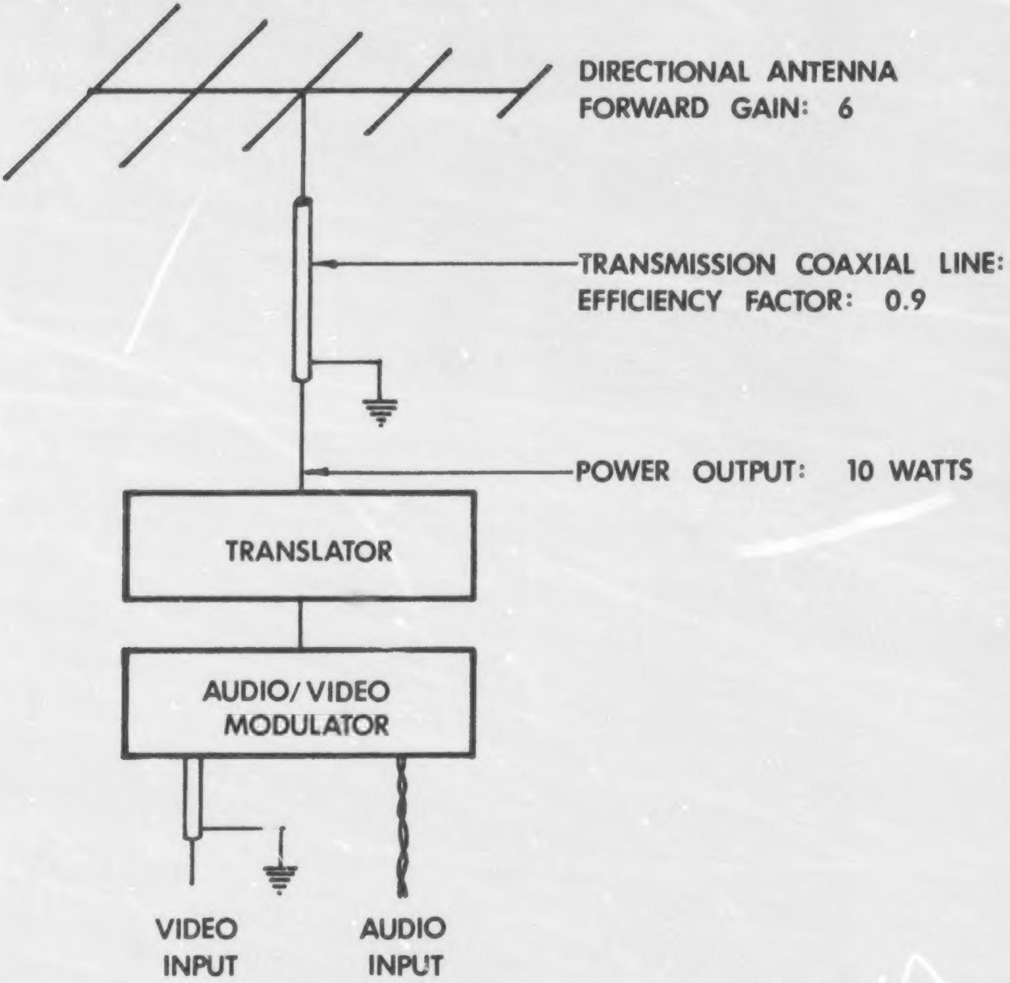


CONSTRUCTION OF APPROXIMATE GRADE B COVERAGE CONTOUR


MIN. DISTANCE
(BACK & SIDE
LOBES)
PROPOSED
SITE
MAX. DISTANCE
(FORWARD LOBE)
SAME SHAPE
AS 1:24.000
SCALE CONTOUR


EARTH
STATION
ANTENNA
LNA
MICROWAVE
FM RECEIVER
VIDEO OUTPUT
AUDIO OUTPUT
TO MINI-
TRANSMITTER

LOW-COST TVRO SATELLITE EARTH TERMINAL


DIRECTIONAL ANTENNA
FORWARD GAIN: 6
TRANSMISSION COAXIAL LINE:
EFFICIENCY FACTOR: 0.9
POWER OUTPUT: 10 WATTS
TRANSLATOR
AUDIO/VIDEO
MODULATOR
VIDEO
INPUT
AUDIO
INPUT

BASIC ELEMENTS OF A MINI-TRANSMITTER

CAPITAL COST, INSTALLATION, AND ANNUAL OPERATING EXPENSE FOR A TYPICAL LOW-COST TVRO SATELLITE EARTH STATION

A. CAPITAL COST

1. 5-meter antenna	$10,000
2. Gas FET LNA	3,100
3. Receiver	8,750
4. Miscellaneous cable, connectors, etc.	500
Total Capital Cost:	$22,350 (June, 1978) $14,000 (December, 1978)

B. INSTALLATION

1. Two man crew for 2 days plus travel and per diem	$ 2,000
2. Concrete foundation for 5-meter antenna	3,500
Total Installation Cost:	$ 5,500

C. ANNUAL MAINTENANCE

1. Parts	$ 500
2. Travel and maintenance time	750
Total Annual Maintenance Cost	$ 1,250/yr

NOTE: Above estimates do not include:

1. Real estate costs
2. Equipment shelter
3. Power service consumption

CAPITAL COST, INSTALLATION, AND ANNUAL OPERATING EXPENSE FOR A 10 WATT VHF MINI-TRANSMITTER SYSTEM

A. CAPITAL COST

I. Transmitter Facilities

1. Mini-Transmitter:	
a. Modulator	$1440
b. 10 watt VHF Translator	5400
2. Transmission Line	215
3. Antenna	135
4. Tower	1000
	$8190

B. INSTALLATION COST

Approximately 10% of Capital Cost	$ 820

C. ANNUAL MAINTENANCE COST

Approximately 6.5% of Capital Cost	$ 535

NOTE: Above estimates do not include:

1. Real estate costs
2. Studio/transmitter building costs
3. Power service and consumption

PUBLIC SERVICE SATELLITE CONSORTIUM

RINCIPAL OFFICE:
1040 SORRENTO VALLEY BOULEVARD
AN DIEGO, CALIFORNIA 92121 • (714) 452 1140

80 WEST 26th AVENUE
ENVER, COLORADO 80211 • (303) 458 7273

26 16th STREET, N.W.
ASHINGTON, D.C. 20036 • (202) 659 2277

Appendix D
Training Materials

PUBLIC TELEVISION SERVICE IN RURAL AMERICA

SURVEY PERSONNEL TRAINING

Denver, Colorado
July 31 - August 1, 1978

July 31, 1978	Agenda	
9:00 - 10:00	Introduction Orientation and Overview of Study Role of Public Service Satellite Consortium Role of Corporation for Public Broadcasting The Public Television Satellite System	Louis Bransford Kathleen King Glenna Northrip
10:00 - 12:00	Technical Systems: Broadcasting Contours Principles of Television Coverage	William Kessler Dail Ogden
1:30 - 3:00	Head End Systems Mini-Transmitter Systems Translators	William Kessler Dail Ogden
3:15 - 4:00	Local Origination	Polly Rash
4:00 - 5:00	FCC Regulations State and Federal Statutes	William Kessler Dail Ogden

* * * *

August 1, 1978	Agenda	
9:00 - 10:30	Equipment and Facilities Costs and Requirements	William Kessler Dail Ogden Polly Rash
10:30 - 11:00	Role of the Community	Glenna Northrip
11:00 - 12:00	The Survey: Procedures Instrumentation Scheduling Reports Deadlines	Kathleen King Glenna Northrip
1:00 - 2:30	Survey/Prototype	Glenna Northrip
2:30 - 3:00	Business Arrangements: Payment Reimbursement	Louis Bransford Kathleen King
3:00 - 3:30	Next Steps	Louis Bransford

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Training Materials

TRAINING MANUAL

Table of Contents

Front side pocket:

1. PSSC brochures (2)
2. Agenda for Survey Personnel Training
3. February, May, June, July newsletters

Section 1: Background Information

1. Study Abstract
2. description of Corporation for Public Broadcasting
3. description of Public Television Satellite System
4. Terminology and Acronyms
5. list of Public Television Stations
6. Wyoming:
    - TV channels currently in operation
    - translators
    - cable systems
7. Montana:
    - TV channels currently in operation
    - translators
    - cable systems
8. Topographic Map Symbols

Section 2: Technical Systems

1. Outline for PTSRA Training Session
2. Definitions of Common Terms and Abbreviations
3. illustration of Coverage Definitions
4. graph of Signal Strength vs. Distance
5. diagram of Location Variability Factor
6. graph of Location Variability Factor
7. graph of Time Variability Factor
8. diagram of VHF TV Channel Allocations in the U.S.
9. illustration of Example of Terrain Advantage
10. illustration of Example of Terrain Disadvantage
11. illustration of Example of No Terrain Advantage or Disadvantage
12. diagrams of Typical Directional Antenna Patterns (cardoid, skull, unidirectional, peanut and skewed peanut)
13. diagram of Example of Topographic Contours and Corresponding Topographic Areas
14. illustration of Features of a TV Translator
15. diagram of UHF-to-VHF Translator
16. Summary of Translator History
17. diagram of Calculation of Mini-Transmitter Effective Radiated Power
18. illustration of Low-Cost TVRO Satellite Earth Terminal
19. illustration of Satellite Distribution
20. diagram of Delivery Options (head ends and distribution/transmission)
21. diagram of Geosynchronous Satellite
22. diagram of Delivery Options (interface hardware and possible combinations)
23. diagram of Basic Elements of a Mini-Transmitter
24. illustration of Remote Antenna and Microwave Link to Mini-Transmitter
25. diagram of Remote Antenna and Microwave Link to Mini-Transmitter
26. illustration of Five Element Yagi Antenna
27. illustration of UHF Antenna
28. illustration of Coaxial Transmission Line

29. illustration of Six Foot Parabolic Microwave Antenna
30. illustration of FM Microwave Transmitter and Receiver
31. illustration of 100 Watt UHF Translator
32. illustration of 10 Watt VHF Translator
33. illustration of Low Noise Amplifier
34. illustration of Audio/Video Demodulator
35. illustration of Receiver
36. illustration of Audio/Video Modulator
37. Capital Cost, Installation, and Annual Operating Expense for a:
    - Typical Low-Cost TVRO Satellite Earth Station
    - 100 Watt UHF Mini-Transmitter System
    - 10 Watt UHF Mini-Transmitter System
    - 100 Watt VHF Mini-Transmitter System
    - 10 Watt VHF Mini-Transmitter System
    - Remote Pickup and One-Hop Microwave Program Relay System
    - Capital Cost of Individual Equipment Items and Interface Hardware

Section 3: FCC Regulations

1. General Guide for Television Translator Applicants (FCC document, revised May, 1976)
2. Television Broadcast Translator Stations (FCC: 74.701, subpart G)
3. Experimental Television Broadcast Stations (FCC: 74.131, subpart A)
4. Notice of Proposed Construction or Alteration (FAA form 7460-1)
5. State and Federal Statutes

Section 4: Local Origination

1. five page narrative
2. Hypothetical Budget for Local Transmission
3. Hypothetical Budget for Mini-Studio
4. diagram of Sample Mini-Studio
5. Definitions

Section 5: Survey Procedures

1. Survey Team Responsibilities
2. Community Profile form
3. Site Survey Questionnaire
    - Part A: Community Information
    - Part B: Technical Information
4. Daily Survey Log form
5. Appointment Schedule/Telephone Log form
6. Final Site Report Format
7. Final State of Region Report Format
8. memo on Policies for PTV in Rural Areas Project
    - travel expense claim form
    - how to complete travel expense claim
    - policy on use of rental vehicles
    - policy on use of PSSC credit cards

Appendix D
Training Materials

Section 6: Materials for Rural Communities

1. PSSC brochures (2)
2. Study Abstract
3. description of Corporation for Public Broadcasting
4. Terminology and Acronyms
5. PBS Program Schedule
6. Local Origination:
   - 5 page narrative
   - Hypothetical Budget for Local Transmission
   - Hypothetical Budget for Mini-Studio
   - illustration of Sample Mini-Studio
   - Definitions
7. Capital Cost, Installation, and Annual Operating Expense for a:
   - Typical Low-Cost TVRO Satellite Earth Station
   - 100 Watt UHF Mini-Transmitter System
   - 10 Watt UHF Mini-Transmitter System
   - 100 Watt VHF Mini-Transmitter System
   - 10 Watt VHF Mini-Transmitter System
   - diagram of Low-Cost TVRO Satellite Earth Terminal
   - diagram of Basic Elements of a Mini-Transmitter
8. Capital Cost, Installation, and Annual Operating Expense for a:
   - Remote Pickup and One-Hop Microwave Program Relay System
   - Capital Cost of Individual Equipment Items and Interface Hardware
   - illustration of Remote Antenna and Microwave Link to Mini-Transmitter
   - diagram of Remote Antenna and Microwave Link to Mini-Transmitter
9. Six Ways to Bring Better TV Reception to Your Community

Public Service Satellite Consortium

January 3, 1979

APPENDIX E
SAMPLE FOLLOW UP LETTER

Mayor Olive R. Hagadone
Box 613
Boulder, Montana 59632

Dear Mayor Hagadone:

We appreciate your interest and willingness to assist PSSC in conducting a survey of selected rural communities for the Corporation for Public Broadcasting. The findings from the study support several viable possibilities for extending or improving public television service in rural America. Accordingly, as we indicated in our earlier communications, we are submitting further information for your community's review and consideration.

A review of the survey results for Boulder in the San Diego office of PSSC confirms that the most practical means of bringing public television to Boulder is by means of a small earth station and mini-transmitter combination. The earth station/mini-transmitter facility should be located at either one of the two commercial translator sites.

The approximate cost of a small earth station using a 4.5 meter (approximately 15 feet) receiving antenna is currently $14,000. The concrete footings and installation cost would be in the neighborhood of $5,000. Annual maintenance costs should not exceed $1,500, since earth station electronic components have proved to be very reliable.

The cost for the mini-transmitter would range from approximately $8,200 to $17,500 depending on whether a 10-watt VHF or a 100-watt UHF mini-transmitter was used in conjunction with the earth station. A 10-watt VHF mini-transmitter would be most desirable. However, the final choice between a VHF channel (Channels 2 through 13) and a UHF channel (Channels 55 through 69) cannot be made until a study is initiated and completed to establish channel availability for the mini-transmitter.

The cost range quoted above does not include shelter for the earth station/mini-transmitter electronics, or real estate costs.

PSSC, realizing that costs at the present time could be prohibitive has recommended to CPB that outside funds must be identified and mobilized

PRINCIPAL OFFICE:
4040 SORRENTO VALLEY BOULEVARD
SAN DIEGO, CALIFORNIA 92121
714-452-1140

2480 WEST 26th AVENUE
Suite 90B
DENVER, COLORADO 80211
303-458-7273

1126 16th STREET, N.W.
WASHINGTON, D.C. 20036
202-659-2277

Appendix E
Sample Follow Up Letter

to bring about the implementation of an operational rural public television network. We are hopeful that some funding will become available to offset some of the costs we outlined above. We will keep you informed on the outcome of our study. If other funds become available in your community to accelerate the process, PSSC would be pleased to assist in conducting the detailed engineering survey, designing specifications, procuring and installing equipment and facilities, training of staff, maintenance and management.

The survey team and the project staff of PSSC appreciate the opportunity of working in your community and look forward to a continued working relationship with you and the citizens of Boulder. We encourage you to make your community's needs and interests known to Mr. Curt Wheeling, Administrator, Communications Division, State of Montana, Department of Administration, Sam W. Mitchell Building, Helena, Montana 59601.

Sincerely,

Louis A. Bransford
Director of Service Development

cc: C. Wheeling

APPENDIX F
SAMPLE SITE SURVEY REPORTS

PUBLIC TELEVISION SERVICE IN RURAL AMERICA

Final Report for Northwest and Western Montana
Survey Team: Jim DeBree and Jack Gill

1. Composite Observations

Without exception, in all eight communities we visited we were received in a warm, friendly, and interested manner. One community even agreed to meet with us on a Saturday. In some cases farmers interrupted their wheat harvesting to attend a meeting. The groups we met with were predominantly male, although three of the communities had woman mayors. In most of these communities the local contact person had gathered together a group of 6-8 members of the community, most of whom were members of the city council or held some other responsible position in the community. On this basis, we feel that the information we collected is valid for each of the communities. We did not visit Ft. Benton because the night before we were scheduled for the visit the mayor called to indicate that he was unable to schedule anyone to meet with us.

All of the communities receive their television signals via translators owned and operated by a local tv translator district. In some cases a few homes receive signals direct from a broadcast station, but these are a very small minority.

While there are some differences from community to community concerning replies to the survey questions the communities are notable for their overall similarities, in our opinion.

2. Findings

We find the following similarities in the communities we visited.

** The tv translator districts are under the supervision of one or two persons who have taken on the responsibility mainly because they find it interesting. Over the years they have become very knowledgeable concerning translator technical operation and regulatory requirements.

** All of the communities fund their translator operations through a tax district, permitted by Montana law. In all but one community, this money is collected by the county. The exception is in Virginia City where, once a year, a volunteer goes door to door collecting donations.

** All of the tv translator districts are presently taxing near or at the $16 per year limit. Therefore, there is limited money available from this source to fund a public tv signal.

** Most of the districts have built up a reserve fund for replacement of equipment in the future.

** All communities are luke warm concerning the idea of local origination. It is our opinion that the brief verbal description of this potential we gace them is not sufficient to convey to them what such a capacity was and how it might be used in the community.

** Every community except Thompson Falls had one or two individuals with whom we met who had some personal experience with public tv programs and spoke highly of them to the rest of the group. Most people had heard of Sesame Street.

** The communities are generally satisfied with their local educational systems, their leasure time opportunities and their climate. Most would like more cultural opportunities.

** Every community has a public library. Several have new buildings. Some have very extensive holdings for the size of the community.

** All communities have numerous bars down Main Street. There is a considerable amount of social drinking. In two communities this was actually listed as a major leasure time activity.

** All translator sites have commercial power and would seem to be amenable to solar and wind power.

** All communities have the same form of local government: a mayor and city council.

** No community has a CATV system, although three communities have been visited by cable interests exploring the possibility. In Thompson Falls there is a concern by the translator district officials that a cable in town would reduce the funding base of the district and thereby adversely affect the signal to those living outside of the town.

** All are concerned with the cost to bring in a PTV signal, especially if an earth station were required.

** In each community the translators are either all VHF or all UHF. There is no mixing, requiring dual antennas for tv receivers.

** All translator sites are difficult to reach. At White Sulpher Springs it took us two hours cross country via a 4-wheel drive vehicle to make a round trip between the site and the town.

** In those communities where we talked with school officials, they are interested in getting instructional tv programs for their schools. Even though we explained that PTV programs are not designed for formal inclass instruction we aren't sure that this fact really sunk in.

** Most of the communities are interested in exploring with neighboring towns the possibility of sharing costs in some way in bringing in a PTV signal.

We find the following differences in the communities.

** In the majority of the communities visited -- Browning, Chester, Chinook, Boulder, White Sulpher Springs, Thompson Falls -- the individuals we met with are concerned that any PTV signal brought in reach the current extended audience outside of the incorporated town area presently reached by their translators. In other words, the townspeople feel a responsibility for their rural neighbors. In the other communities, the terrain was such that their translators covered only the immediate incorporated area.

** Some communities have been approached concerning a CATV installation; most have not.

** The technical quality of translator installations seems to vary from community to community. Some communities say their present signals are fine; others complain about constant variations in signal quality. Some communities have the assistance of broadcast station engineers; most go it alone with whatever local resources they have, ie. a local tv repairman. In Phillipsburg, the translators are located downhill from the community. The antennas are on top of a barn; the equipment in the hay loft in an old freezer. The antennas are surrounded by a large and mature grove of cottonwoods, which must adsorb a considerable amount of the radiated energy.

** Those communities with a primarily agricultural base seem to be those communities that have a sufficient financial base that might permit them to finance a PTV signal.

** Browning is the only town on an Indian Reservation. They might be able to receive financial assistance from the Bureau of Indian Affairs to bring in a PTV signal.

** Boulder is the only community with a state institution.

** Phillipsburg is the only community where the school building is wired for closed circuit tv.

** The plains communities -- Browning, Chester, Chinook -- had the poorest tv signals from their translators, due to the distance between the translators and the towns.

** Thompson Falls was the only community receiving no tv signals from Montana stations. All of their channels come from Spokane.

** The Western communities are in counties where a large percentage of the land is under Forest Service management.

** Browning is the only community where the local leadership is not White Anglo Saxon Protestant; it is Indian.

We did not observe many patterns.

** Where the current translators cover an area greater than the incorporated town itself, concerns are expressed that a PTV signal cover the same area.

** Where there are citizens who have had personal viewing experience with public tv programs, they have voiced a high level of complimentary remarks concerning what they saw.

3. Generalizations

** Any PTV signal brought into a community should probably originate from the same location as the present translators in that area. This would eliminate the need for a new building, access roads, and power sources. The signal should be either VHF or UHF, matching what is already in use. This would eliminate the need for any additional receiving antennas in the community.

** There is a concern in all of the communities with a lack of cultural opportunities. The communities feel they need PTV eve more than urban areas who already have many opportunities due to their larger size.

** Community populations are generally stable; there is little evidence of transients. So the people in these communities are there to stay and are interested in bettering what they have rather than moving somewhere else.

** All the communities tend to be seasonally employed. They have alot of time on their hands in the winter.

4. Conclusions

There is a definite and strong interest in all communities visited, except one, for bringing in a public television signal. That one exception is Thompson Falls and this eems due to the fact that no one we visited with had any personal experience with the programs. The individual running the translators said, however, that he gets frequent inquiries from people moving into the area as to why one isn't available because they had it elsewhere and miss it.

All of the communities are concerned with the cost of bringing a signal in, especially if it would entail building an earth station. But several thought it could be done with local funding "if the people wanted it." In Chinook they were saying that if the Lions Club and Chamber of Commerce were behind the idea that it would happen.

We believe that it is unlikely that any of these communities will pursue acquiring a PTV signal solely on the basis of our visit. These communities will require additional hand holding, information, and technical assistance before they get the ball rolling on their own.

The possibility of a community acquiring a PTV signal would be greatly enhanced if the costs of same could be shared with other communities. In most of the communities we visited an earth station could be located to serve several communities. Therefore, if all of the communities in such an area could be informed concerning PTV and how it could be acquired, shared cost projects might be initiated.

We recommend that PSSC and CPB explore the possibility of funding a demonstration program designed to bring to these communities actual PTV programming. At one end of this demonstration spectrum we can see a portable earth station and translator which could be brought into a community for a week to run PBS programming plus other materials on video tape. This could also include demonstrations of local origination capabilities and the use of the system in the local schools. At the other end of the spectrum, it might be as simple as bringing in a video cassette player and a set of tapes to the local library for a week for people to come in and look at.

We sense that communities would be more inclined to move ahead with such a project if there was a wider knowledge of what they would be getting for their money. It is not satisfactory to try and vebalize the programming.

We also believe that efforts should be made to involve appropria state agencies. For example, in the territory we covered, there appear to be several sites where if a PTV signal could be provided by the

State, local communities could afford to pick that signal up and to rebroadcast it into their communities via a translator. The biggest difficulty we see at this time is the fact that there aren't such signals available. In those communities where a PTV signal is available, it is distributed by CATV.

The two of us enjoyed working on this project and would welcome the opportunity to work with PSSC in the future.

Appendix F
Sample Site Survey Reports

FINAL SITE REPORT

Boulder, Montana
DeBree, Gill

1. Met in the morning with small group of local leaders then followed up in the afternoon with individual visits. People are very friendly and indicated a stong interest in public broadcast. Community does enjoy an excellent signal on commerical stations.

2\.

An excellent system is in place and people are proud of what they have been able to develop over the years. Town is lacated in a small valley that would lend itself to a small translator system.

Transmission Site should be situated within present system

Small earth station could be incorproated into prenent system very nicely. One could also be located on the contintenal divide where Boulder picks up their signal.

mini Transmitter could be used very effectively in library.

Cable system would be to costly to install

Translators are presenty being used. People know and understand translators and have the capability to service them

local origination would be possible in the shcools and considerable interest was expressed.

Finances would be a problem however people indicated they would certainly assess themselves if better programs could be made available. They would like assistance from the state and because they are the home for one state institution they feel the state might be interested.

3\.

Very much interest however finances would be a problem. their current system is in excellent shape and have excellent service personnel to maintain system.

People were also interested in the state of Montana pursuing a state network providing better educational programs.

Appendix F - Sample Site Survey Reports

COMMUNITY PROFILE

Instructions: Information requested below may be submitted in narrative form. The purpose is to record subjective data on the community itself and your impressions, observations, etc. as a result of the visit. This report is DUE WITHIN 3 DAYS of the site survey.

Community Name: Boulder Mt

Date of Site Survey: 8 Aug 78

Survey Team: DeBree Gill

DESCRIPTION OF INTERVIEW: (names of people interviewed, their position in the community, duration of interview, setting, discussion, etc.)

Olive Hagadone, Mayor, Kenneth Trettin,city clerk, Wade Lewis,tv appliance Ralph Simons, Mont Power, William Shoqist, Tv District board member, Merc Vosburg, County School Supt., Pam Kanies,librarian. Spent the am discussing public tv and the potential for their community. Afternoon in individual visits to determine community system. Very much interested in public tv for several of the group were familiar with current programs. they feel their is an opportunity to utilige the facilities of the Boulder River school for the mentally ill.

DESCRIPTION OF COMMUNITY: (significant or unique characteristics -- may include population, geographic, economic, political, educational, resources, etc.)

County seat town and home of a state institution. town is seperated from rest of the county by mountinous terrain. Appears to have a growing population and the library is beginning to serve as a focal point for adult educational programs. Local school has video equipment that is used for local sports events. Town is lacking is financial resources. Town is situated about halfway between Butte and Helena.

ATTITUDE OF COMMUNITY: (receptive, skeptical, hostile, etc.)

People were a bit skeptical at first because the thought we were involved with a private company that had tried to implement cable tv/ using satellite and local translator. Group changed their attitude as soon as they understood the program and became very interested in survey. Cooperated beautifullyl One member felt the State of Montana should be involved in assisting small towns establish an educational network. Town receives its signal from transmitters located on the contintental divide. They felt an earth station could be located near the present transmitters on the divde.

OTHER COMMENTS OR OBSERVATIONS:

Boulder may have the best system to date& they now are replacing one translator with a new model just purchased. They would very much like to have public t v but their TV district generates $1500/year. Local leaders indicated that people would support public TV with an annual assessment. State School in the community represents an additional resource that may be interested in local origination capability.

Mail to: Dr. Louis A. Bransford
Public Service Satellite Consortium
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Appendix F - Sample Site Survey Reports

FINAL REPORT

SURVEY TEAM - Patricia Aaker
Ralph K. Aaker

August 27, 1978

Communities that we covered ranged from the small community of Ryegate, Montana, population 258 to the largest of Plentywood, Montana, population of 2,400. We did not have any community that had an ethenic composition. All of the areas relied on farming and ranching, some oil and coal, as the economic bases of the community.

The terrain ranged from mostly gentle rolling slopes in the Northeastern part to the hilly, somewhat timbered in the mid-section of Harlowton, Ryegate, and Roundup. Most rural people live in the valleys.

The communities in the Northeastern part of the state were not served by bus and relied mainly on their own car or truck for transportation into the larger populated towns, such as Billings, a population of approx. 120,000. Most of the towns had an airstrip of some sorts. No commercial air travel however, just charter or private aircraft. Hospitals were small but available in seven of the nine towns that we visited. Roundup's hospital will probably re-open in the very near future.

It seemed that books were available either in a local library or by book mobiles. None of these communities had an adequate book store for purchasing servious books.

The weather pattern in Eastern Montana is lots of wind and cold temperatures, with little snow, except last winter they received lots of snow. The summer temperatures are comfortable with the evenings cooling off.

For the most, fishing and hunting seemed to be the biggest activity mentioned for recreation and leisure. No one readily admitted that they watched television any great amount of time. More viewing of TV in the winter months.

All of the communities centered a great deal of their time to the local elementary and high school activities.

The Sr. Citizens played an important role in each community as there seemed to be alot of retired people in all of these rural areas.

All of the towns had the usual organizations, clubs and etc.

Weekly newspapers were published in 8 of the towns that we visited with one paper covering the 9th. Most people subscribed to the Billings Gazette and some to the Great Falls Tribune, daily papers. Most of the communities relied on talking to people they know for day to day news. During the day they tuned in to Montana radio to hear the news of the state.

POINTS OF GENERAL SUMMATION

1. Seven communities were positive towards ITV and requested follow-up assistance. Two communities, Jordan, and Harlowton, show indifference largely because of the mayors and Harlowton's railroad situation.

2. Costs of receiving ITV were the top subject and concern of all the communities. It boils down to a high cost distributed among few people.

3. To identify an organization willing, qualified, and with enough clout to follow through with what ever plan may be devised, is a most important consideration. We made a major point of this issue and hope that the groups selected will follow through. In some cases, the lead may change, but someone must carry the ball to see that correspondence and planning is carried out.

4. The proposal made at the Scobey, Jordan, and Circle communities, for broadbanding of rural telephone lines is strong. Leaders expressed optimism that legislation would be passed in 1979, allowing this to be done. Certainly with VHF frequencies filled and UHF questionable, this is the most promising method in the areas they serve.

5. While spending a week-end in Wolf Point, Montana, contacts were made and we believe that they will want ITV. While this community was not on our list of communities to survey, it could be included. Mr. Wally Olds, CATV operator will cooperate as we determined from him in Plentywood for Wolf Point. Kathy King has our list of people, addresses and phone numbers on who to contact in Wolf Point.

6. In some communities there is a strong sentiment against Educational TV because of what happened in the state legislature about three years ago. We got this from legislators we knew and met on week-ends while in Montana.

7. Everywhere we went, people expressed a distaste for cop shows, violence and much of present commercial programming, but were willing to watch it.

8. People were satisfied with their present translator reception. One community, Ryegate, expressed the want to increase power from 1 watt to 10 watts to possibly reach a few more homes. The one cable operation that we encountered operating in Wibaux, was in our opinion acceptable and provided a service.

9. VHF translator capability appears possible in Harlowton, Ryegate and Roundup. The far eastern communities of Broadus, Plentywood, Scobey, Jordan, Circle and Wibaux, VHF use is questionable, because all frequencies are being used. Further studies will be necessary in the use of VHF. The use of UHF translators are also questionable in all Montana communities we surveyed because of the rolling hilly terrain.

10. The eastern Montana towns are very sensitive to the needs of rural people and TV reception. Roundup, Ryegate and Harlowton have small translators. These translators tend to cover the towns only, while rural areas fend for themselves, with their own translators or direct pick-ups.

11. Microwave distant reception from common carriers is not economical in all of the areas we visited.

12. The impact of the Milwaukee Railroad, discontinuing present operations, in the terminal town of Harlowton, would be extremely heavy. One hundred fifty railroad jobs will be eleminated and there appears no other alternative to provide employment at this time. Ryegate, and Roundup will also feel the Railroad effects but of lesser extent.

13. Our final conclusion would define ten communities, we visited, to want PTV. To divide the cost of receiving dishes and translators among so few people is the main and major question. All towns we visited were made up of a high percentage of retired older people on limited incomes.

The communities of Plentywood, Wolf Point and Wibaux will receive PTV via CATV.

The rural telephone cooperatives legislation on broadbanding lines to rural areas is in our opinion a most viable way to receive TV. For these areas it makes political sense, however, we also understand the impact of this proposal on CATV operators and Translators.

Patty and I very much enjoyed this experience and are grateful for it. We would welcome future opportunities as we work well together. I would welcome job related work in any area that may present itself. I feel my ten years of CATV activity, political, County Agent and people orientated work may fit somewhere if the opening and my experience should become a match.

Appendix F
Sample Site Survey Reports

FINAL SITE REPORT

Broadus, Montana
Patricia and Ralph Aaker

It was our candid and somewhat surprised observation that this community is very interested in PBS service. Our background of county commissioner, county extension, chamber of commerce and community planning was most helpful in communicating. We did not expect such a favorable attitude. The county commissioners have money available through general revenue sharing. A county special improvement district (SID) is possible, requiring 40% of taxpayers favorable response within the boundaries of the proposed district. TV taxing translator districts are possible also and this money has not been assessed for the past three years. The county commissioners have used general revenue sharing revenues to finance translators.

The unreliability of the present translators was a concern and people had difficulty believing that a satellite receiver and translator would be relatively trouble free.

The next step for this community will be a coordinated effort with PSSC for an engineering feasility study. VHF translator distribution is definitely the best method because of the rolling terrain and most rural people live in low areas making UHF translators questionable.

Because of interest and rural area support, a VHF 100 watt translator would be ideal, but again, this must be checked for spurrious signals and secondary harmonics. The only two channels available are Ch 8 and 13 and both are questionable because of co-channel interference.

We summarise by requesting on behalf of this community, a desire for engineering, financial and planning assistance.

COMMUNITY PROFILE

Instructions: Information requested below may be submitted in narrative form. The purpose is to record subjective data on the community itself and your impressions, observations, etc. as a result of the visit. This report is DUE WITHIN 3 DAYS of the site survey.

Community Name: Broadus, Montana

Date of Site Survey: Aug. 6 & 7 1978

Survey Team: Patricia Aaker

Ralph K. Aaker

DESCRIPTION OF INTERVIEW: (names of people interviewed, their position in the community, duration of interview, setting, discussion, etc.)

See attached sheet

DESCRIPTION OF COMMUNITY: (significant or unique characteristics -- may include population, geographic, economic, political, educational, resources, etc.)

A ranching, rolling hill community. Favorable climate. A 1st class grade an high school with calf roping competition as an activity of high interest. The county economically exports school funds because of oil revenue which is top in the state. Funding of public TV, always a problem, is possible as expressed by city, county and community leaders assembled in a meeting for this purpose.

ATTITUDE OF COMMUNITY: (receptive, skeptical, hostile, etc.) This is a very receptive community to PBS reception. Not one unfavorable person was interviewed of 20 community leaders contacted and assembled in a meeting. This community definitely is seriously interested and intends to follow through to the completion of receiving PBS by way of satellite receiver and a translator of maximum possible power and coverage, so as to reach as much of the county as possible.

OTHER COMMENTS OR OBSERVATIONS: The next steps for Broadus, Mt.

1. PSSC technical assistance to determine VHF translator availability on Ch 8 or 13. VHF is much favored, but must be checked out by qualified technical crew.
2. PSSC financial information. Possibilities of grants and etc.
3. Any further assistance PSS can give to the eventual construction and operation of PBS reception.

Mail to: Dr. Louis A. Bransford
Public Service Satellite Consortium
4040 Sorrento Valley Blvd., Suite D
San Diego, CA 92121

Appendix F
Sample Site Survey Reports

August 21, 1978

FINAL REPORT	Eastern Wyoming
SURVEY TEAM	Flenniken and McMullen
SITES VISITED	Medicine Bow, Burns, Lusk, Manville, Glendo, Glenrock Midwest, Edgerton, Sundance

I. Without fail, people seemed interested (if confused) about ETV/PTV, our visit and what was being expected of them. They were concerned about finances - most towns have other more pressing priorities such as streets and water - and our feeling was that they were rather covertly skeptical. There were varying degrees of enthusiasm, many statements of disaffection with commercial TV and a desire to see something else on "the tube." Because Wyoming currently has a Governor's Public Television Commission looking into the possibilities once again of a state system and a state authority, there seemed to be not only a desire for PTV, mainly as an alternative, but good interest in seeing a state system evolve which would provide a service to them without individual community initiative. And there were offers of help to convince state legislators to support such a system. We were well received everywhere by those who attended the meetings. Usually attendance was small.

II. A. General economy in most towns was poor, although a county may be relatively affluent. In most places, in fact, people reflected a county or area feeling in regards to PTV service rather than just their own community. In Sundance, school representatives said that if the school system put any money into such a project, it would have to serve all the schools in the district. That would be true in all school districts. Of course, if a community itself did something exclusive of the schools, that would not necessarily be the case, but it might be a concern.

B. More stable communities such as Burns, Lusk and Sundance expressed stronger interest and enthusiasm, it seemed. Such towns as Glendo (which can get PTV from a translator on Laramie Peak in case the tower isn't blown down), Midwest and Edgerton, all of which tend to be more transient in population makeup, are more narrowly interested. Yet it was at Midwest where there was an offer to do grass roots work for a state system.

C. Earth stations were not a viable alternative except for Midwest-Edgerton and Medicine Bow. At these towns, an earth station seemed to be the only alternative because of lack of signal and expensive microwave distances.

D. The penetration of PTV through CATV and translators (or possible penetration in the near future) was greater than anticipated, although signal strength and reliability tended to be erratic in the case of translators.

E. There was a general low awareness of what PTV is in the broad sense. In Glenrock, where the cable does carry PTV, people were still rather unaware, confused by the complex TV Guide listings, and felt the PTV signal was generally erratic and unreliable. Yet, upon checking with the CATV manager, we found his story about the signal to be absolutely different. He said the PTV signal had not "been out once in the past five weeks," although as a rule "signal quality coming into the system isn't as good as on some channels." We checked the signal out at the motel and PTV was there. In fact, the best cable signal we saw (given motel set differences) was in Glenrock.

F. In addition to getting signals to areas, there needs to be some way of increasing awareness of PTV. Again in Glenrock, the school representatives voiced a need in the community for knowing what is on PTV. Since they seem to perceive PTV there as too erratic or unavailable for use in schools, what it boiled down to was that they really didn't know what was available and hadn't taken the time to check with the cable operator. In fact, the Mayor indicated that he had told Glenna Northrup when she called that there was no PTV because the signal was unreliable not because it was non-existant. Newspapers, community newsletters, and service organizations could be a viable option for transferring information about PTV and programs available.

G. Excepting only Manville and Burns, every community we visited had been contacted by cable companies or were already in the process of preparing franchise papers. This does not mean immediate service. In Lusk, the franchise has been held for 10 years. At this time it is fairly sure the service will be available in a year. The Mayor of Lusk remains very skeptical about when the system will be installed. We called the franchise holder and he assured us that he was in the process of surveying microwave sites that week, that KRMA out of Denver would be on the Lusk system, and that it would be in operation by spring.

H. Most towns had some expertise available to assist in maintenance of electronics (although no First Class License holders). Considering the condition of some of the translators, though, you wouldn't believe that. Land for locating facilities and assistance for installation was also available. Power seemed to be no problem anywhere.

III. Perhaps the area we covered is relatively unique. However, the present penetration of cable and translator is quite high. Because of energy related growth in the state, impaction is causing CATV operators to move ahead into previously unserved areas. The Satellite Cable Company plans certainly portend more commercial delivery of television into smaller underserved areas. Individual communities smaller than those being approached by CATV in this part of the state really do not have access to resources - funds and people - to do much on their own, especially where off-air signals, whether transmitter, booster or translator, are not available without microwaving. Also, given the topography of hills, mountains, valleys, etc., the opportunities for service to larger areas than just single communities needs to be investigated more completely. Otherwise, cost effectiveness simply isn't there.

IV. The individual community plan does not seem very viable here. Banding together of several communities - i.e. all the towns in a county - so that not only is there a viewing alternative but an educational alternative as well would do more to further the PTV coverage and acceptance. Of course, a state system in Wyoming would generally make this effort moot anynow. Any progress on a state system initiative will probably be evident by March of 1969. Regardless of this, however, unless there is more work done very shortly, and rather close contact maintained with the communities visited on this project, whatever interest the survey has aroused will die quickly. There is a certain amount of skepticism about surveys, federal programs, etc. among these people. So without quick, good follow up and continued initiative on the part of CPB/PSSC, not much will be accomplished toward PTV in this part of rural America.

Appendix F
Sample Site Survey Reports

FINAL SITE REPORT

Sundance, Wyoming
McMullen, Flenniken

1. Synopsis

One of the 2 best organized towns on this tour. Stable, good community spirit. High interest in school and education. Committed to improvement but cautious (i.e., swimming pool project moving slowly because of high cost and slow donations). A happy place, very friendly. Best solution would appear to be a translator system picking up Rapid City PTV....cable is coming to Sundance but not immediately.

2. Findings

General:	Proximity to PTV in Rapid City and the fact that Sundance has a Television Association already in operation could make this one of the easiest sites to get the signal in.
Transmission Site:	Two possible. Warren Peak for county-wide service to schools and surrounding communities. Might put Sundance in a shadow. Sundance Peak, just south of town, is where present translator is located and for immediate service to Sundance, it would be best. Power is available at both sites.
Small Earth Station:	Appeared impractical due to signal proximity from Rapid City.
Mini-Transmitter:	If CATV system does come in, a mini-transmitter might be located at CATV pick up point to serve wider area. A pick up of PTV signal from Terry Peak could be microwaved to the mini-transmitter on either Sundance or Warren Peak.
Cable System:	Recent franchise request by Pine Bluffs Cable. If it comes in, it will carry KRMA and we suggested that their franchise include PTV service as a requirement.
Translator:	They currently have 2 -- poorly maintained -- financed by community donations. (Many people pick up off-air signals from South Dakota stations and KTWO in Casper, depending on home antenna location.) No PTV!

Final Site Report
Sundance, Wyoming
McMullen, Flenniken

Local Origination:	Not much interest. Without cable, cost to transmitter would be high.
Financial Arrangements:	Machinery for supporting options may be there through the Sundance TV Association. Municipal funds not readily available now. School District input would depend on serving entire county. (Schools could not benefit completely without this coverage.) People would be very supportive of a state system.

3. Recommendations

A dual transmitter system -- 1 on Terry Peak and one on Sundance Mountain would be the best immediate solution for receiving PTV. This would also permit wider coverage of the area....Hulett and Moorcroft. If Warren Peak can get a signal down into Sundance. it would be a superior location, based (again) on wider coverage area.

Cable television into Sundance would alleviate the need for translator, i.e., Sundance should try to encourage operator. Still, county wide coverage would be important for maximum use of PTV in the area.

Appendix F - Sample Site Survey Reports

COMMUNITY PROFILE

Instructions: Information requested below may be submitted in narrative form. The purpose is to record subjective data on the community itself and your impressions, observations, etc. as a result of the visit. This report is DUE WITHIN 3 DAYS of the site survey.

Community Name: Sundance, Wyoming

Date of Site Survey: 8/18/78

Survey Team: Flenniken

McMullen

DESCRIPTION OF INTERVIEW: (names of people interviewed, their position in the community, duration of interview, setting, discussion, etc.)

The meeting was a luncheon at the Aro Cafe. Nine representatives attended (see attached) including the mayor, city council, school superintendent, principal, chamber of commerce head, and senior citizens representatives. The meeting lasted 1½ hours. (Formally). Discussion centered on recent developments with cable, alternatives for service and uses of PTV for the various groups at the meeting. A well organized, ambitious and positive meeting.

DESCRIPTION OF COMMUNITY: (significant or unique characteristics -- may include population, geographic, economic, political, educational, resources, etc.)

Sundance is nestled in the Black Hills region. As such tourism is fairly active here in the summer. The population is extremely stable. (Popham from the electric company says 1 person leaves company every 4-5 years.) There is no concentrated industry. Town is a multi-service community to ranching, energy, and forest services. Topography is a problem - It's a hole, surrounded by the Black Hills. Education (Adult, continuing, and public) is a high priority here.

ATTITUDE OF COMMUNITY: (receptive, skeptical, hostile, etc.)

VERY RECEPTIVE. After a bad experience in Midwest-Edgerton, it was really neat to see a community involved: not only in PTV, but in their whole community's progress. They are trying to raise $350,000 for an indoor swimming pool - they are having a tough time doing it, but they are committed to it. Given some directions and guidance, there is no question about the project's success in Sundance!

OTHER COMMENTS OR OBSERVATIONS:

If the above doesn't say it, Sundance is a great place. The people are very receptive. They are extremely happy here, but anxious to improve the community. They have a "Sundance TV Association" which has placed translators on Sundance peak. The mechanism is there to add PTV out of Rapid City or to support other alternatives. Just sorry Glenna didn't comere here instead of Midwest/Edgerton. You'd love it here Glenna, really!!

Mail to: Dr. Louis A. Bransford
Public Service Satellite Consortium
4040 Sorrento Valley Blvd., Suite D
San Diego, CA 92121

FINAL REGION REPORT

WESTERN WYOMING

LOIS AND RAY ANDERTON

1. COMPOSITE OBSERVATIONS

Because the communities differed in size, economy, degree of isolation, and life style, it is difficult to make composite observations, except to note that the people from all eight areas were flattered to have been selected for the survey, and they enjoyed answering questions about their communities. All eight communities would like to receive public television, but not all eight could fund the project.

2. FINDINGS

The people of six of the eight communities were very excited about public television programming and wanted very much to be able to receive public television. The two areas where the responce was less than enthusiastic were Burlington and Hyattville. As has already been detailed in earlier reports, the Burlington people who attended the meeting were not representative of the residents of the area, and the Hyattville people had misunderstood the purpose of the meeting and were very disappointed to learn we were not sent there to bring them commercial television.

Those living in the four larger communities--Afton, Shoshoni, Ten Sleep, and Mammoth--want very much to bring PTV into their areas, are able and willing to provide some funds, and are anxiously awaiting word from PSSC to see what their next steps should be.

The people from Manderson and Pavillion--both small, poor communities dependent on agriculture--want PTV but know their populations are too small and their people too poor for them to be able to raise the needed funds themselves. The people of Manderson are so determined to get PTV that they plan to try to get help from their state government.

The only hindrance to bringing PTV into any of the communities is the shortage of funds. Six of the eight want PTV very much, and the other two would gratefully accept it if money were not a problem.

According to Dail Ogden, whom Ray telephoned in Denver, and to Bill Huffman of Mammoth, the terrain and distances to be covered would not cause serious problems, so every community could receive PTV via a small earth station and a 10 watt or 100 watt mini-transmitter. Every site had at least one location, complete with available power, amenable to an earth station and mini-transmitter. There is a possibility the signal could be brought to Afton via translator. If that can not be done, then they would consider building an earth station.

3. GENERALIZATIONS

As stated previously, we expect the people of the four larger communities--Afton, Shoshoni, Ten Sleep, and Mammoth--to carry through with the project with the guidance of PSSC and eventually receive PTV.

The other four communities were very small and very poor. Instead of being surprised that there was little enthusiasm for fund raising in two of the four, we should probably be surprised that positive steps were taken in the other two. Pavillion, Manderson, Burlington, and Hyattville consist mostly of retired ranchers living on small fixed incomes and landless agricultural laborers. In population, those towns are 181, 150, 100, and 54, and most of the residents had never heard of public television before our visit. Even after telling them of the possibility of matching funds, to expect 100 people to donate upwards of $20,000 to see a type of television they have never heard of is asking a lot. And yet, in two of those small communities, the reaction was not just polite but enthusiastic.

We don't know if PSSC plans to visit other sites in the future. If expansion is planned, we have a few more generalizations to offer in the way of suggestions about selecting other sites:

1) Quite a few communities in Wyoming center around an active Church of the Latter Day Saints. Generally, the church members support PTV because of the educational programs for children and because many of the programs can be viewed together by the entire family. If this study is expanded, it might be wise to seek Mormon communities.

2) Apparently by coincidence, nearly every site we surveyed was nearly lily white. There must be some communities in Wyoming with more minority groups. Unless those areas were eliminated because of economic factors, it would be nice to include them as future sites.

3) Very small, unincorporated areas dependent on agriculture

cannot build an earth station. Unless more than just matching funds will be made available to such areas, it seems to be a waste of our time and theirs to generate their enthusiasm for something they cannot afford.

4) Wyoming is experiencing an energy boom with millions of new dollars coming into the state, but we visited only one town--Shoshoni--that is profiting from it. If the goal is to locate towns that will invest funds in PTV, more communities near oil fields, gas fields, or uranium mines should be visited.

5) We hear that Anderton and Anderton make a great team, and if this study is expanded in Wyoming or elsewhere they would be interested in conducting further surveys.

Appendix F
Sample Site Survey Reports

FINAL SITE REPORT

Ten Sleep, Wyoming
Lois and Ray Anderton

1. Synopsis

Ten Sleep, like the other Mormon communities we visited, had a large number of people who want PTV because they want programs the entire family can watch together. They are very dissatisfied with both the quality of the programming and the quality of the reception on their present TV channels.

Most people had never heard of public TV before, but they were receptive once they understood what it was.

The community includes many ranches that were not covered by the 100 watt overlay. After visiting Ten Sleep, we phoned Dail in Denver and learned that the actual signal reaches much farther than the overlay indicates.

A cable company charged them a great deal of money several years ago and then did not meet its promises, so the people were a little cautious.

Twenty-three friendly, warm people attended the meeting and seemed to leave with the feeling that PTV would be good for their community.

2. Findings

They get a direct signal from Thermopolis, so there is no existing translator. There is a hill less than a mile southeast of town with power available that would be a good site for the mini-transmitter. The earth station could be built at the base of the hill.

The nearest cable is 28 miles away at Worland. Because they were cheated by a cable company they are not interested in cable TV. They are also not interested in local origination.

They said they would be interested in supporting public television financially and would create a fund raising organization. However, money is very scarce in the community.

3. Recommendations

We gave a very conservative estimate of the distance the 100 watt signal would travel. Later, when we talked to Dail, he told us the signal would easily include the outlying ranches. Perhaps in future correspondence they could be told we were too conservative in our estimate.

Mayor Shriver asked that another contact person be designated. Archie McCalla was chosen. Please direct future correspondence to him:

Mr. Archie McCalla
Box 31
Ten Sleep, Wyoming

If the people of Ten Sleep continue to be as enthusiastic about PTV as they became the night of our meeting, they will probably build an earth station and 100 watt mini-transmitter.

COMMUNITY PROFILE

Instructions: Information requested below may be submitted in narrative form. The purpose i to record subjective data on the community itself and your impressions, observations, etc. as a result of the visit. This report is DUE WITHIN 3 DAYS of the site survey.

Community Name: Ten Sleep, Wyoming

Date of Site Survey: 8/8/78

Survey Team: Lois Anderton
Ray Anderton

DESCRIPTION OF INTERVIEW: (names of people interviewed, their position in the community, duration of interview, setting, discussion, etc.)

Twenty-three people met with us in the town hall, including the mayor and superintendent of schools. Several people were familiar with public television and spoke out in favor of it. Their questions were positive and to the point. We discussed cost and the possibility of matching funds from a government agency or private foundation, stressing that the funds have not been committed yet. The people seemed willing to start a fund raising drive as soon as they hear from PSSC.

DESCRIPTION OF COMMUNITY: (significant or unique characteristics -- may include population, geographic, economic, political, educational, resources, etc.)

The neighboring ranches are very much a part of the community and the people feel that a larger area should be included than can be covered by a 100 watt mini-transmitter. The community is not economically depressed.

ATTITUDE OF COMMUNITY: (receptive, skeptical, hostile, etc.)

This was a friendly, enthusiastic, receptive group of people. They are already talking of forming committees and starting fund raising drives. A few people were not interested in PTV programs, but many want good programs for family viewing.

OTHER COMMENTS OR OBSERVATIONS:

Twelve years ago they paid $160 per family to a cable company that did not live up to its promises. Reception was terrible and after 2 or 3 years the company took the cable down from telephone poles and left the people with a big financial loss and very poor reception.

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